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Data Paper

OLICH: A reference library of DNA barcodes for Nordic lichens

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Abstract

Background

DNA barcodes are increasingly being used for species identification amongst the lichenised fungi. This paper presents a dataset aiming to provide an authoritative DNA barcode sequence library for a wide array of Nordic lichens.

New information

We present 1324 DNA barcode sequences (nrITS) for 507 species in 175 genera and 25 orders. Thirty-eight species are new to GenBank and, for 25 additional species, ITS sequences are here presented for the first time. The dataset covers 20–21% of the Nordic lichenised species. Barcode gap analyses are given and discussed for the three genera *Cladonia*, *Ramalina* and *Umbilicaria*. The new combination *Bryobilimbia fissuriseda* (Poelt) Timdal, Marthinsen & Rui is proposed for *Mycobilimbia fissuriseda* and Nordic material of the species, currently referred to as *Pseudocyphellaria crocata* and *Psoroma tenue* ssp. *boreale*, are shown to belong in *Pseudocyphellaria citrina* and *Psoroma cinnamomeum*, respectively.

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Keywords

DNA barcoding, ITS, Lichenised fungi, Norway, Taxonomy

Introduction

Lichens are fungi living in mutualistic symbiosis with green algae and/or cyanobacteria. They are highly polyphyletic and 20–30 independent lichenisation events may have occurred during the evolution of higher Fungi (Schoch et al. 2009, Lücking et al. 2017a). The lichenised fungi currently consists of more than 19,000 species, i.e. about 17% of all known fungal species and 27% of all known ascomycete species (Lücking et al. 2017a). They occur globally in all major terrestrial ecosystems, especially on trees, soil and rock. Although a lichen thallus consists of a symbiotic association between a fungal exhabitant, the mycobiont and one or more photosynthetic algal and/or cyanobacterial inhabitants, the photobionts, the taxonomy and nomenclature follow that of the mycobiont. A lichen thallus may house additional fungi, i.e. parasites, parasymbionts and endophytes (Hawksworth 1982, Richardson 1999, Spribille et al. 2016), making a lichen thallus a complex symbiotic assemblage.

Identifying lichenised fungi has traditionally been based on morphological, anatomical and chemical characters, but DNA-based identification is now increasingly being used. In 2012, the internal transcribed spacer of nuclear ribosomal DNA (ITS) was recommended as the primary fungal DNA barcode marker by the International Fungal Barcoding Consortium (Xu 2016), following studies on its suitability by for example Schoch et al. (2012). For lichenised fungi, studies reporting successful use of the ITS marker for species delimitations include Kelly et al. (2011), Zheng et al. (2011), Parnmen et al. (2013), Leavitt et al. (2014), Magain and Serusiaux (2015) and Divakar et al. (2016). Pino-Bodas et al. (2013), however, found ITS often failing for species delimitations in *Cladonia* and investigated alternative markers.

In this paper, we present a DNA barcode dataset for Nordic lichens, including 1324 records, comprising 507 species in 175 genera and 25 different orders.

General description

Purpose: This dataset aims to provide an authoritative DNA barcode sequences library for a wide array of Nordic lichens. The library should facilitate DNA-based identification of species for both traditional molecular studies and DNA-metabarcoding studies and should also be a resource for biosystematic research on Nordic lichens.

Additional information: Eighty sequences have been published previously, but are included here as they were produced under the OLICH project, i.e. GenBank IDs KT800002–07 (Westberg et al. 2015), KU687445–60 (McCune et al. 2016), KU873926–32

(Timdal et al. 2016), KY682961 (Pykälä et al. 2018), 38 sequences within the series MG838156–201 (Kistenich et al. 2018), MG968256–61 (Haugan and Timdal 2018) and MK567159–64 (Haugan and Timdal 2019). In addition, 151 sequences (KY266831–981) have been submitted to GenBank previously for an unpublished project.

Results: Thirty-eight species are new to GenBank: *Arthonia phaeobaea*, *Arthopyrenia salicis*, *Bactrospora corticola*, *Baeomyces carneus*, *Buellia arnoldii*, *B. dives*, *Candelariella arctica*, *Cladonia cyanipes*, *Coccotrema citrinescens*, *Eopyrenula leucoplaca*, *Epilichen glauconigellus*, *E. scabrosus*, *Gyalecta foveolaris*, *Lecanora atrosulphurea*, *L. leptacina*, *Ochrolechia alaskana*, *O. alboflavescens*, *O. gowardii*, *O. mahluensis*, *Orphniospora moriopsis*, *Phaeophyscia kairamoi*, *Pilophorus dovrensis*, *Pseudocyphellaria norvegica*, *Pyrenula occidentalis*, *Ramalina cuspidata*, *Rhizocarpon badioatrum*, *R. bolanderi*, *R. chioneum*, *R. jemtlandicum*, *R. leptolepis*, *R. rittokense*, *R. santessonii*, *R. subgeminatum*, *Rinodina balanina*, *R. disjuncta*, *R. roboris*, *Stereocaulon capitellatum* and *S. symphycheilum*.

Twenty-five additional species are previously represented in GenBank, but not with ITS sequences: *Arthonia didyma*, *Bryobilimbia fissuriseda*, *Buellia epigaea*, *Callome multipartita*, *Dendrographa latebrarum*, *Fuscidea mollis*, *Gyalecta flotowii*, *G. friesii*, *G. geoica*, *Gyrographa gyrocarpa*, *Halecania alpivaga*, *Koerberiella wimmeriana*, *Opegrapha vermicellifera*, *Pertusaria aspergilla*, *P. carneopallida*, *Phlyctis agelaea*, *Placynthiella oligotropha*, *Psoronactis dilleniana*, *Pyrenula laevigata*, *Ramboldia elabens*, *Sagiolechia protuberans*, *Stereocaulon grande*, *Thelotrema macrosporum*, *Tremolecia atrata* and *Varicellaria lactea*.

Project description

Title: The name OLICH refers to “contributions from the **O**slo **lich**en herbarium”.

Personnel: Gunnhild Marthinsen (project coordinator), Siri Rui (project engineer), Einar Timdal (taxonomic supervisor), all affiliated to the Natural History Museum, University of Oslo.

Study area description: The Nordic countries, including Svalbard: Norway, mainland (97.0% of the specimens), Sweden (2.0%), Finland (0.5%), Norway, Svalbard (0.5%), Fig. 1.

Funding: This project is funded by the Norwegian Research Council (RCN 226134) through the Norwegian Barcode of Life project (NorBOL). In addition, the Norwegian Species Information Centre (Artsdatabanken) has funded four projects on lichens under the Norwegian Taxonomy Initiative from which material has been collected and/or sampled (project numbers 70184216, 70184227, 70184233, and 70184237).

Figure 1. doi

Distribution of the OLICH records

Sampling methods

Sampling description: The material was partly freshly collected specimens from the field and partly previously curated specimens in university herbaria. The distribution of specimen age at seqencing is given in Fig. 2. The specimens were initially determined by experts based on morphology and secondary chemistry and the identifications were re-examined at the quality control after sequence acquisition. All collected material were, after sampling, deposited in university herbaria and the entire material is housed in BG (2.1%), H (0.1%), O (94.9%), SAV (0.2%), TRH (1.7%) and TROM (1.1%) (abbreviated according to *Index Herbariorum*; http://sweetgum.nybg.org/science/ih).

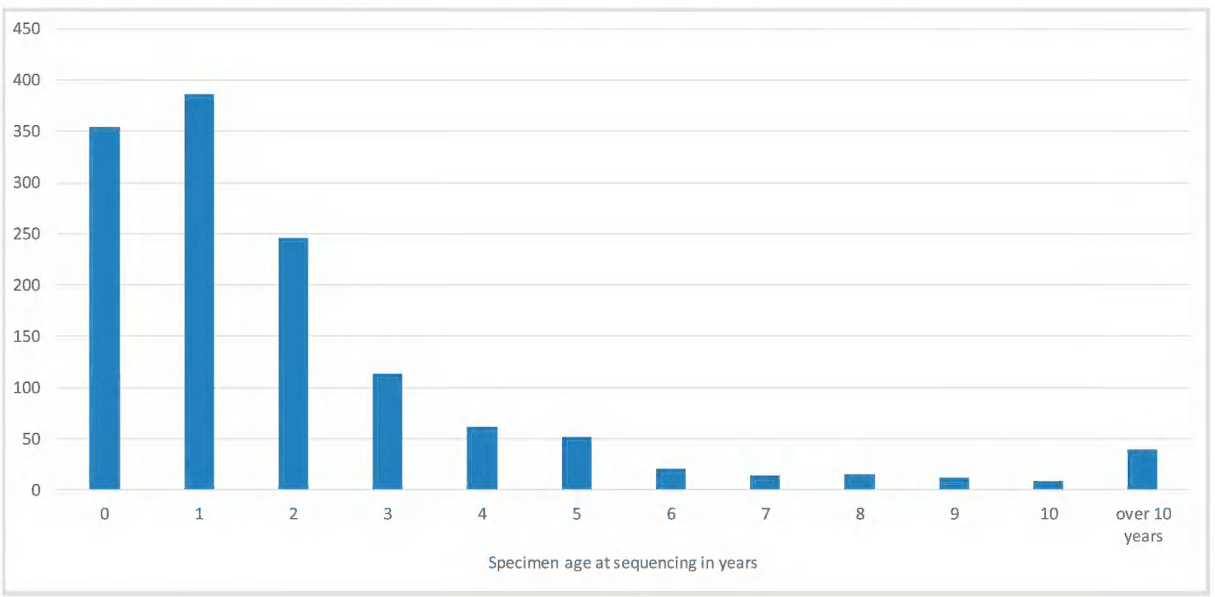

Figure 2. doi

Distribution of specimen age (years after collecting) at sequencing in the OLICH dataset.

Thin-layer chromatography (TLC) was performed for identification of secondary compounds on selected specimens in accordance with the methods of Culberson (1972), as modified by Menlove (1974) and Culberson and Johnson (1982). Solvent system B' was used for routine examination, A and C for additional confirmation.

Tissue of thallus or preferably apothecia (about 3 mm^3) was assembled in 96 well plates obtained from the Canadian Centre for DNA Barcoding (CCDB; http://ccdb.ca). One well was left empty to serve as negative control. The freshly collected material was either sampled in the field or at a field station. In the field, the specimen was first photographed, then tissue was removed with a flame-decontaminated forceps and placed in the well and finally the specimen was collected. Specimens requiring more controlled handling were photographed and sampled either with forceps or scalpel under a binocular lens at a field station. Wells containing fresh material were dried for several days with lids open in a drying chamber containing silica gel. Herbarium material was sampled at the housing institutions under binocular lenses.

Field data was stored on tablets and GPSs. Tissue sampling data and photography data were transferred directly to standard BOLD spreadsheets, whereas the collection data passed through herbarium databases for obtaining institution storing, voucher ID (= sample ID), uniform nomenclature and taxonomical hierarchy and contact information. Material sampled in herbaria used a similar pipeline, although simpler, as collection data was already available.

The plates were sent to CCDB for DNA extraction (following Ivanova et al. 2011) and sequencing of the ITS region (following Kuzmina and Ivanova 2011). Primers used were ITS1-F or ITS5 (forward) and ITS4 (reverse) (Gardes and Bruns 1993, White et al. 1990). Trace files and sequences were uploaded to BOLD (Ratnasingham and Hebert 2007). The sequences were edited at CCDB, but occasionally inspected and re-edited at OLICH.

Quality control: All OLICH sequences were subjected to a local BLASTn search against a database consisting of all lichen ITS sequences in GenBank (downloaded 26-06-2018) and all unpublished lichen ITS sequences were produced at various projects at our own institution, including the OLICH dataset. We inspected automatically generated distance-based neighbour-joining trees for all genera represented in the OLICH dataset, i.e. we merged all OLICH sequences with all GenBank ITS sequences from the same genus before running ClustalW2 (http://www.clustal.org/clustal2) in batch mode (one run for each genus) and saving the trees. For selected cases (Figs. 5–15), phylogenetic analyses were performed through the following pipeline: selecting relevant additional sequences for comparison from the GenBank download; aligning the dataset using the online version of MAFFT (https://mafft.cbrc.jp/alignment/server); trimming ends and manually editing the alignment using BioEdit 7.1.3.0 (Hall 1999); analysing the alignment by the maximum likelihood method using RAxML v. 8.2.10 (Stamatakis 2014) by applying the “ML + rapid bootstrap” method with 100 bootstrap repeats and the GTRGAMMA substitution model; and editing the best-scoring tree using TreeGraph2 (Stöver and Müller 2010).

To further check that the sequences and species determinations were correct and also to check whether species delimitation, based on traditional characters, coincides with ITS species delimitation, we performed barcode gap analyses. The three genera in our dataset with most sampled species were chosen for these analyses; *Cladonia*, *Ramalina* and *Umbilicaria*. Sequences were aligned separately for each genus using the ClustalW algorithm implemented in MEGA7 (Kumar et al. 2016), with additional manual editing. Pairwise genetic distances between all specimens within each of the three genera were calculated in MEGA7, using the K2P substitution model. The distances were summarised in a bar plot, based on a histogram of all pairwise distances. For each species pair within the genera, we plotted the maximum intraspecific distance against the minimum distance to nearest neighbour-species.

Geographic coverage

Description: The Nordic countries, including Svalbard (Fig. 1).

Coordinates: 58.02°N and 78.94°N Latitude; 5.06°E and 31.08°E Longitude.

Taxonomic coverage

Description: The OLICH dataset comprises 1324 records of 507 species belonging to 25 orders, 8 classes and 2 phyla of fungi (Table 1). The Nordic lichen flora comprises some 2400–2500 lichenised species (2387 are listed in Santesson et al. (2004)), i.e. the dataset comprises about 20–21% of the currently known Nordic species. Several taxonomic groups are still poorly understood, however, making the production of authoritative DNA-barcodes for many species premature due to uncertain taxonomy and/or lack of fresh material. The dataset is hence biased towards the more well-known groups, mainly the macrolichens in the orders Lecanorales (233 spp.), Peltigerales (62 spp.) and Caliciales (37 spp.) of the class Lecanoromycetes (Ascomycota). The taxonomy and nomenclature follows Nordin et al. (2019) unless commented on under Observations below.

Table 1.

List of specimens included in the OLICH dataset (sequence length >200bp, 1324 records, 507 species). Thin Layer Chromotagrophy (TLC, Chemistry-column) was only done in species complexes where chemical data is relevant for the identification of the species or where there are chemical strains within the species.

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Acarospora glaucocarpa	Acarosporales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201295	OLICH3852-17	MK811746	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Acarospora molybdina	Acarosporales	NO, Finnmark, 2014, E. Timdal	O-L-195556	OLICH1514-14	KY266941	
Acarospora wahlenbergii	Acarosporales	NO, Hedmark, 2013, E. Timdal	O-L-184511	OLICH737-13	MK811773	
Acarospora wahlenbergii	Acarosporales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184363	OLICH742-13	MK812641	
Acarospora wahlenbergii	Acarosporales	NO, Telemark, 2013, E. Timdal	O-L-184419	OLICH870-13	MK811926	
Acolium inquinans	Caliciales	NO, Nordland, 2012, J.T. Klepsland	O-L-186246	OLICH2077-15	MK812481	
Acolium inquinans	Caliciales	NO, Buskerud, 2012, T.H. Hofton	O-L-194494	OLICH2080-15	MK811701	
Acolium inquinans	Caliciales	NO, Aust-Agder, 2014, J.T. Klepsland	O-L-200169	OLICH3168-16	MK812233	
Acolium inquinans	Caliciales	NO, Hedmark, 2014, R. Haugan	O-L-207991	OLICH3827-17	MK811747	
Alectoria nigricans	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195780	OLICH1652-14	MK812557	
Alectoria nigricans	Lecanorales	NO, Finnmark, 2014, M. Westberg	O-L-195858	OLICH1703-14	KY266967	
Alectoria nigricans	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195886	OLICH1731-14	KY266922	
Alectoria nigricans	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195950	OLICH1795-14	KY266831	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Alectoria nigricans	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196314	OLICH2244-15	MK812235	
Alectoria nigricans	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200895	OLICH2548-16	MK812358	
Alectoria ochroleuca	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195746	OLICH1618-14	KY266936	
Alectoria ochroleuca	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195883	OLICH1728-14	KY266959	
Alectoria ochroleuca	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195823	OLICH2195-15	MK811939	
Alectoria ochroleuca	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200894	OLICH2547-16	MK812226	
Alectoria ochroleuca	Lecanorales	NO, Oppland, 2012, K.A. Lye	O-L-206884	OLICH4129-17	MK812278	
Alectoria sarmentosa	Lecanorales	NO, Nord-Trøndelag, 2012, J.T. Klepsland	O-L-186255	OLICH1441-14	MK812505	
Alectoria sarmentosa	Lecanorales	NO, Sogn og Fjordane, 2009, T.H. Hofton	O-L-186870	OLICH1452-14	MK812223	
Alectoria sarmentosa	Lecanorales	NO, Østfold, 2013, B.P. Løfall & O. Wergeland Krog	O-L-187364	OLICH1460-14	MK812403	
Alectoria sarmentosa	Lecanorales	NO, Sogn og Fjordane, 2014, K.J. Grimstad & O. Olsen	O-L-193185	OLICH1478-14	MK812717	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Alectoria sarmentosa	Lecanorales	NO, Sør-Trøndelag, 2014, S. Vatne	O-L-200758	OLICH3273-16	MK812509	
Allantoparmelia alpicola	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195748	OLICH1620-14	KY266874	
Allantoparmelia alpicola	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195850	OLICH1695-14	KY266926	
Allantoparmelia alpicola	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195899	OLICH1744-14	KY266946	
Allantoparmelia alpicola	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196324	OLICH2254-15	MK811991	
Allantoparmelia alpicola	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201391	OLICH4173-17	MK811876	
Anaptychia ciliaris	Caliciales	NO, Aust-Agder, 2012, J.T. Klepsland	O-L-186030	OLICH1419-14	MK812701	
Anaptychia ciliaris	Caliciales	NO, Hedmark, 2011, T.H. Hofton	O-L-194359	OLICH1483-14	MK812099	
Anaptychia ciliaris	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195591	OLICH1532-14	MK812249	
Anaptychia ciliaris	Caliciales	NO, Finnmark, 2014, G. Thor	O-L-195736	OLICH1608-14	KY266912	
Anaptychia ciliaris	Caliciales	NO, Akershus, 2014, E. Timdal	O-L-199982	OLICH1956-15	MK812295	
Anaptychia ciliaris	Caliciales	NO, Oslo, 2014, E. Timdal	O-L-198929	OLICH2482-16	MK812296	
Anaptychia runcinata	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195767	OLICH1639-14	MK812680	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Anaptychia runcinata	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196019	OLICH1864-14	MK811742	
Anaptychia runcinata	Caliciales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208017	OLICH4189-17	MK811645	
Arctocetraria andrejevii	Lecanorales	NO, Finnmark, 2012, H. Henriksen	O-L-180951	OLICH869-13	MK811992	norrangiformic acid (minor), rangiformic acid (major)
Arctoparmelia centrifuga	Lecanorales	NO, Troms, 2014, R. Haugan	O-L-198774	OLICH2399-16	MK812567	
Arctoparmelia centrifuga	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200879	OLICH2536-16	MK812513	
Arctoparmelia centrifuga	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184727	OLICH942-13	MK812611	
Arctoparmelia incurva	Lecanorales	NO, Finnmark, 2014, T. Tønsberg	O-L-195717	OLICH1589-14	KY266852	
Arctoparmelia incurva	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195832	OLICH2204-15	MK811976	
Arthonia didyma	Arthoniales	NO, Nord-Trøndelag, 2013, J.T. Klepsland	O-L-197934	OLICH4022-17	MK812348	
Arthonia phaeobaea	Arthoniales	NO, Sør-Trøndelag, 2013, J.T. Klepsland	O-L-198129	OLICH3187-16	MK812215	
Arthopyrenia salicis	Pleosporales	NO, Nord-Trøndelag, 2016, J.T. Klepsland	O-L-206752	OLICH3471-17	MK812299	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Arthopyrenia salicis	Pleosporales	NO, Møre og Romsdal, 2016, J.T. Klepsland	O-L-206774	OLICH3493-17	MK812520	
Asahinea chrysantha	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195754	OLICH1626-14	KY266872	
Bacidia bagliettoana	Lecanorales	NO, Akershus, 2009, R. Haugan	O-L-161668	OLICH282-13	MG838180	
Bacidia bagliettoana	Lecanorales	NO, Troms, 2009, J.T. Klepsland	O-L-164908	OLICH284-13	MG838178	
Bacidia subincompta	Lecanorales	NO, Finnmark, 2011, E. Timdal	O-L-170623	OLICH198-13	MG838157	no lichen substances
Bacidia subincompta	Lecanorales	NO, Sogn og Fjordane, 2013, J.T. Klepsland	O-L-197862	OLICH2086-15	MG838186	
Bacidia subincompta	Lecanorales	NO, Østfold, 2001, B.P. Løfall	O-L-105331	OLICH310-13	MG838165	
Bacidia subincompta	Lecanorales	NO, Oslo, 2014, J.T. Klepsland	O-L-200148	OLICH3180-16	MG838175	
Bacidia subincompta	Lecanorales	NO, Nordland, 2015, J.T. Klepsland	O-L-206520	OLICH3420-17	MG838176	
Bacidia vermifera	Lecanorales	NO, Troms, 2011, J.T. Klepsland	O-L-177162	OLICH264-13	MG838160	
Bacidia vermifera	Lecanorales	NO, Troms, 2009, J.T. Klepsland	O-L-165007	OLICH299-13	MG838169	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Bactrospora corticola	Arthoniales	NO, Nord-Trøndelag, 2010, H. Holien	TRH-L-13774	OLICH1208-14	MK811961	
Bactrospora corticola	Arthoniales	NO, Nord-Trøndelag, 2009, H. Holien	TRH-L-12953	OLICH1209-14	MK811741	
Bactrospora corticola	Arthoniales	NO, Nord-Trøndelag, 2009, H. Holien	TRH-L-12974	OLICH1210-14	MK811643	
Bactrospora corticola	Arthoniales	NO, Sør-Trøndelag, 2010, G. Gaarder	TRH-L-651772	OLICH1211-14	MK811979	
Bactrospora corticola	Arthoniales	NO, Sør-Trøndelag, 2014, S. Vatne	O-L-200761	OLICH2438-16	MK812695	
Baeomyces carneus	Baeomycetales	NO, Østfold, 2003, B. P. Løfall	O-L-125189	OLICH4208-17	MK811898	
Baeomyces carneus	Baeomycetales	NO, Østfold, 2010, J.T. Klepsland	O-L-174982	OLICH4421-17	MK812113	
Baeomyces placophyllus	Baeomycetales	NO, Telemark, 2014, E. Timdal	O-L-196267	OLICH1942-15	MK812574	
Baeomyces placophyllus	Baeomycetales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196313	OLICH2243-15	MK812640	
Baeomyces rufus	Baeomycetales	NO, Telemark, 2014, S. Rui & E. Timdal	O-L-194160	OLICH1481-14	MK811923	
Baeomyces rufus	Baeomycetales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200015	OLICH1989-15	MK812462	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Baeomyces rufus	Baeomycetales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201257	OLICH2765-16	MK812004	
Baeomyces rufus	Baeomycetales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201258	OLICH2766-16	MK812643	
Baeomyces rufus	Baeomycetales	NO, Aust-Agder, 2014, J.T. Klepsland	O-L-200581	OLICH3271-16	MK812401	
Bilimbia lobulata	Lecanorales	NO, Nordland, 2001, B.P. Løfall	O-L-105772	OLICH469-13	MK812451	
Bilimbia lobulata	Lecanorales	NO, Troms, 2009, J.T. Klepsland	O-L-164992	OLICH470-13	MK812712	
Bilimbia lobulata	Lecanorales	NO, Nordland, 2000, S. Rui & E. Timdal	O-L-51771	OLICH471-13	MK812122	
Bilimbia lobulata	Lecanorales	NO, Oppland, 1995, R. Haugan & E. Timdal	O-L-19936	OLICH630-13	MK812573	
Bilimbia sabuletorum	Lecanorales	NO, Buskerud, 2008, J.T. Klepsland	O-L-158388	OLICH206-13	MK812338	
Bilimbia sabuletorum	Lecanorales	NO, Telemark, 2010, S. Rui & E. Timdal	O-L-163841	OLICH207-13	MK812048	no lichen substances
Bilimbia sabuletorum	Lecanorales	NO, Oslo, 2009, J.T. Klepsland	O-L-164642	OLICH208-13	MK812294	
Bilimbia sabuletorum	Lecanorales	NO, Aust-Agder, 2010, J.T. Klepsland	O-L-175077	OLICH209-13	MK812254	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Bilimbia sabuletorum	Lecanorales	NO, Hedmark, 2004, R. Haugan	O-L-131717	OLICH632-13	MK811845	
Blastenia ammiospila	Teloschistales	NO, Finnmark, 2014, U. Arup	O-L-195889	OLICH1734-14	KY266873	
Blastenia crenularia	Teloschistales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196018	OLICH1863-14	MK811924	
Blastenia crenularia	Teloschistales	NO, Nordland, 2014, J.T. Klepsland	O-L-200301	OLICH3173-16	MK811921	
Blastenia crenularia	Teloschistales	NO, Akershus, 2013, S. Rui & E. Timdal	O-L-203051	OLICH3289-16	MK812322	
Brianaria lutulata	Lecanorales	NO, Aust-Agder, 2015, J.T. Klepsland	O-L-206489	OLICH3390-17	MK812659	
Brianaria tuberculata	Lecanorales	NO, Aust-Agder, 2015, J.T. Klepsland	O-L-206488	OLICH3389-17	MK811824	
Brodoa atrofusca	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200891	OLICH2544-16	MK811833	
Brodoa atrofusca	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184308	OLICH725-13	MK811829	atranorin (major), physodic acid (minor), protocetraric acid (major)
Brodoa intestiniformis	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-190610	OLICH1474-14	MK811819	
Brodoa intestiniformis	Lecanorales	NO, Hordaland, 2014, E. Timdal	O-L-195806	OLICH1678-14	MK811842	

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Brodoa intestiniformis	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-195819	OLICH2191-15	MK812115	
Brodoa intestiniformis	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184709	OLICH928-13	MK812552	
Brodoa oroarctica	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200939	OLICH2660-16	MK811789	
Brodoa oroarctica	Lecanorales	NO, Hedmark, 2017, E. Timdal	O-L-207794	OLICH4155-17	MK812012	
Brodoa oroarctica	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184297	OLICH726-13	MK812600	
Bryobilimbia diapensiae	Lecideales	NO, Finnmark, 2011, E. Timdal	O-L-170679	OLICH1167-14	MK812130	
Bryobilimbia diapensiae	Lecideales	NO, Nordland, 2012, R. Haugan	O-L-182225	OLICH1168-14	MK811983	
Bryobilimbia diapensiae	Lecideales	NO, Sør-Trøndelag, 2004, R. Haugan	O-L-142025	OLICH144-11	MK812681	
Bryobilimbia diapensiae	Lecideales	NO, Troms, 2003, R. Haugan	O-L-141675	OLICH145-11	MK812677	
Bryobilimbia diapensiae	Lecideales	NO, Finnmark, 2014, S. Rui	O-L-195960	OLICH1805-14	KY266915	
Bryobilimbia fissuriseda	Lecideales	NO, Oppland, 2005, E. Timdal	O-L-148945	OLICH627-13	MK811695	
Bryobilimbia fissuriseda	Lecideales	NO, Oppland, 2006, R. Haugan	O-L-145176	OLICH628-13	MK812621	

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Bryobilimbia fissuriseda	Lecideales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184390	OLICH647-13	MK811896	
Bryobilimbia hypnorum	Lecideales	NO, Nordland, 2014, J.T. Klepsland	O-L-200331	OLICH3196-16	MK812370	
Bryobilimbia hypnorum	Lecideales	NO, Aust-Agder, 2014, J.T. Klepsland	O-L-200584	OLICH3198-16	MK811910	
Bryocaulon divergens	Lecanorales	NO, Hedmark, 2013, R. Haugan	O-L-190313	OLICH1472-14	MK812080	
Bryocaulon divergens	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195982	OLICH1827-14	KY266917	
Bryocaulon divergens	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196360	OLICH1919-15	MK812069	
Bryocaulon divergens	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196317	OLICH2247-15	MK811658	
Bryoplaca sinapisperma	Teloschistales	NO, Troms, 2014, J.T. Klepsland	O-L-200396	OLICH4055-17	MK812160	
Bryoria bicolor	Lecanorales	NO, Buskerud, 2009, S. Svantesson	O-L-157404	OLICH1369-14	MK811780	
Bryoria bicolor	Lecanorales	NO, Rogaland, 2011, J.T. Klepsland	O-L-176874	OLICH1396-14	MK812469	
Bryoria bicolor	Lecanorales	NO, Hedmark, 2012, R. Haugan	O-L-179764	OLICH1400-14	MK811677	
Bryoria bicolor	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183745	OLICH1403-14	MK812128	

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Bryoria bicolor	Lecanorales	NO, Hedmark, 2012, R. Haugan	O-L-183997	OLICH1404-14	MK812174	
Bryoria capillaris	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-199996	OLICH1970-15	MK812045	alectorialic acid, barbatolic acid
Bryoria capillaris	Lecanorales	SE, Lule Lappmark, 2014, E. Timdal	O-L-195685	OLICH2008-15	MK812229	alectorialic acid, barbatolic acid
Bryoria capillaris	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-195816	OLICH2188-15	MK812443	alectorialic acid, barbatolic acid
Bryoria capillaris	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184687	OLICH871-13	MK812425	alectorialic acid, barbatolic acid, fumarprotocetraric acid
Bryoria fremontii	Lecanorales	FI, Perä-Pohjanmaa, 2014, E. Timdal	O-L-195488	OLICH1498-14	MK812707	
Bryoria fremontii	Lecanorales	SE, Härjedalen, 2014, E. Timdal	O-L-195688	OLICH2011-15	MK812076	
Bryoria fremontii	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-207993	OLICH3830-17	MK812563	
Bryoria furcellata	Lecanorales	FI, Perä-Pohjanmaa, 2014, E. Timdal	O-L-195487	OLICH1497-14	MK812435	
Bryoria furcellata	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195834	OLICH2206-15	MK811793	

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Bryoria furcellata	Lecanorales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200527	OLICH2618-16	MK812653	
Bryoria furcellata	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-207994	OLICH3831-17	MK812397	
Bryoria implexa	Lecanorales	FI, Perä-Pohjanmaa, 2014, E. Timdal	O-L-195485	OLICH1495-14	MK812092	fumarprotocetraric acid
Bryoria implexa	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195887	OLICH1732-14	KY266878	no lichen substances
Bryoria implexa	Lecanorales	SE, Torne Lappmark, 2014, E. Timdal	O-L-195665	OLICH2004-15	MK812090	no lichen substances
Bryoria implexa	Lecanorales	SE, Lule Lappmark, 2014, E. Timdal	O-L-195686	OLICH2009-15	MK812159	no lichen substances
Bryoria implexa	Lecanorales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197823	OLICH2087-15	MK812714	fumarprotocetraric acid
Bryoria implexa	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196325	OLICH2255-15	MK812347	fumarprotocetraric acid
Bryoria implexa	Lecanorales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200539	OLICH2604-16	MK812375	fumarprotocetraric acid
Bryoria implexa	Lecanorales	NO, Hedmark, 2017, E. Timdal	O-L-207753	OLICH4156-17	MK811675	no lichen substances
Bryoria implexa	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184688	OLICH872-13	MK812231	fumarprotocetraric acid

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Bryoria nadvornikiana	Lecanorales	NO, Sogn og Fjordane, 2008, G. Gaarder	O-L-155318	OLICH1367-14	MK812079	
Bryoria nadvornikiana	Lecanorales	NO, Hedmark, 2012, R. Haugan	O-L-183994	OLICH2172-15	MK811678	
Bryoria nadvornikiana	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-176834	OLICH2173-15	MK812465	
Bryoria nadvornikiana	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-198885	OLICH2397-16	MK812326	
Bryoria nadvornikiana	Lecanorales	NO, Hedmark, 2017, E. Timdal	O-L-207754	OLICH4157-17	MK812417	alectorialic acid (major), barbatolic acid (minor), fumarprotocetraric acid (minor)
Bryoria nadvornikiana	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184689	OLICH873-13	MK812390	
Bryoria nitidula	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195715	OLICH1587-14	KY266934	fumarprotocetraric acid (major), protocetraric acid (minor)
Bryoria simplicior	Lecanorales	FI, Inarin Lappi, 2014, E. Timdal	O-L-195506	OLICH1505-14	MK812146	
Bryoria simplicior	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195825	OLICH2197-15	MK812415	
Bryoria simplicior	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200936	OLICH2562-16	MK811887	
Bryoria smithii	Lecanorales	NO, Vest-Agder, 2011, J.T. Klepsland	O-L-177044	OLICH2165-15	MK811714	

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Bryoria smithii	Lecanorales	NO, Rogaland, 2011, J.T. Klepsland	O-L-176881	OLICH2166-15	MK812250	
Bryoria tenuis	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196345	OLICH1905-15	MK812591	
Buellia arnoldii	Caliciales	NO, Aust-Agder, 2015, H. Holien	TRH-L-16501	OLICH3670-17	MK811634	
Buellia badia	Caliciales	NO, Vestfold, 2015, E. Timdal	O-L-198941	OLICH2498-16	MK812426	
Buellia disciformis	Caliciales	NO, Troms, 2014, J.T. Klepsland	O-L-200381	OLICH4052-17	MK812587	
Buellia dives	Caliciales	NO, Nord-Trøndelag, 2015, H. Holien	TRH-L-16419	OLICH3631-17	MK811893	
Buellia epigaea	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195523	OLICH1507-14	KY266900	
Buellia erubescens	Caliciales	NO, Nord-Trøndelag, 2015, U. Nordin	O-L-201275	OLICH3229-16	MK811955	
Bunodophoron melanocarpum	Lecanorales	NO, Rogaland, 2011, H. Fjeldstad	O-L-177411	OLICH1399-14	MK812059	
Bunodophoron melanocarpum	Lecanorales	NO, Hordaland, 2011, J.T. Klepsland	O-L-177097	OLICH2161-15	MK812620	
Bunodophoron melanocarpum	Lecanorales	NO, Sogn og Fjordane, 2010, J.T. Klepsland	O-L-175004	OLICH2163-15	MK811949	

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Calicium adspersum	Caliciales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200822	OLICH2410-16	MK812068	
Calicium pinicola	Caliciales	NO, Oppland, 2015, R. Haugan	O-L-204191	OLICH4087-17	MK811674	
Calicium viride	Caliciales	NO, Hedmark, 2017, S. Rui & E. Timdal	O-L-207800	OLICH4161-17	MK812371	
Callome multipartita	Peltigerales	NO, Buskerud, 2013, S. Reiso & T. Høitomt	O-L-194256	OLICH2054-15	MK811803	
Calogaya biatorina	Teloschistales	NO, Sogn og Fjordane, 2013, J.T. Klepsland	O-L-197877	OLICH2459-16	MK812288	
Calogaya decipiens	Teloschistales	NO, Oslo, 2014, R. Haugan et al.	O-L-196061	OLICH1877-14	MK812143	
Calogaya decipiens	Teloschistales	NO, Hedmark, 1998, R. Haugan	O-L-55723	OLICH4389-17	MK812258	
Calogaya decipiens	Teloschistales	NO, Akershus, 2010, R. Haugan	O-L-167011	OLICH4390-17	MK811994	
Caloplaca chlorina	Teloschistales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-198079	OLICH4423-17	MK811786	
Caloplaca chlorina	Teloschistales	NO, Telemark, 2014, J.T. Klepsland	O-L-200720	OLICH4425-17	MK811988	
Caloplaca demissa	Teloschistales	NO, Rogaland, 2010, J.T. Klepsland	O-L-200085	OLICH3270-16	MK812156	

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Caloplaca demissa	Teloschistales	NO, Sogn og Fjordane, 2010, S. Vatne	O-L-169301	OLICH3953-17	MK812032	
Caloplaca monacensis	Teloschistales	NO, Buskerud, 1998, H. Bratli	O-L-39356	OLICH4422-17	MK811632	
Calvitimela armeniaca	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195741	OLICH1613-14	KY266899	alectorialic acid
Calvitimela livida	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195842	OLICH1687-14	KY266947	atranorin, stictic acid
Calvitimela melaleuca	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195711	OLICH1583-14	KY266838	alectorialic acid, atranorin
Calvitimela melaleuca	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195915	OLICH1760-14	KY266897	alectorialic acid, norstictic acid
Candelaria concolor	Candelariales	NO, Rogaland, 2015, T. Tønsberg & E. Nygaard	BG-L-98168	OLICH3699-17	MK812350	
Candelariella arctica	Candelariales	NO, Finnmark, 2014, J.T. Klepsland	O-L-200509	OLICH3171-16	MK812015	
Candelariella aurella	Candelariales	NO, Troms, 1998, R. Armstrong	TROM_L_50030	OLICH3532-17	MK812178	
Candelariella coralliza	Candelariales	NO, Akershus, 2014, E. Timdal	O-L-199992	OLICH1966-15	MK812334	
Candelariella coralliza	Candelariales	NO, Buskerud, 2014, E. Timdal	O-L-195833	OLICH2205-15	MK812024	
Candelariella coralliza	Candelariales	NO, Aust-Agder, 2004, J.T. Klepsland	O-L-186001	OLICH2460-16	MK811884	

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Candelariella coralliza	Candelariales	NO, Telemark, 2015, E. Timdal & S. Rui	O-L-200875	OLICH3836-17	MK812646	
Candelariella placodizans	Candelariales	NO, Troms, 2003, J.W. Bjerke	TROM_L _521176	OLICH3583-17	MK812262	
Candelariella placodizans	Candelariales	NO, Troms, 2009, J.T. Klepsland	O-L-164896	OLICH3949-17	MK811687	
Candelariella placodizans	Candelariales	NO, Nordland, 2000, E. Timdal	O-L-51849	OLICH3950-17	MK811709	
Candelariella placodizans	Candelariales	NO, Oppland, 2009, R. Haugan	O-L-159822	OLICH3951-17	MK812369	
Candelariella placodizans	Candelariales	NO, Telemark, 2008, J.T. Klepsland	O-L-164600	OLICH3952-17	MK812523	
Candelariella vitellina	Candelariales	NO, Nord-Trøndelag, 1999, H. Bratli	O-L-41044	OLICH3941-17	MK811713	
Candelariella vitellina	Candelariales	NO, Vest-Agder, 2011, H. Bratli	O-L-175901	OLICH3943-17	MK811697	
Candelariella vitellina	Candelariales	NO, Oslo, 2010, R. Haugan	O-L-166987	OLICH3948-17	MK812582	
Cetraria aculeata	Lecanorales	NO, Finnmark, 2014, M. Bendiksby	O-L-195862	OLICH1707-14	KY266883	
Cetraria aculeata	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196315	OLICH2245-15	MK811967	
Cetraria aculeata	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196032	OLICH3808-17	MK811881	

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Cetraria aculeata	Lecanorales	NO, Østfold, 2013, K.A. Lye	O-L-194757	OLICH4090-17	MK811694	
Cetraria aculeata	Lecanorales	NO, Vest-Agder, 2011, H. Bratli	O-L-175907	OLICH4091-17	MK811732	
Cetraria ericetorum	Lecanorales	NO, Hedmark, 2013, R. Haugan	O-L-190276	OLICH1469-14	MK811667	
Cetraria ericetorum	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195750	OLICH1622-14	KY266868	
Cetraria ericetorum	Lecanorales	NO, Buskerud, 2015, E. Timdal & S. Rui	O-L-200904	OLICH3839-17	MK811635	
Cetraria ericetorum	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184702	OLICH884-13	MK811886	
Cetraria islandica	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-200003	OLICH1977-15	MK812195	
Cetraria islandica	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-195818	OLICH2190-15	MK812355	
Cetraria islandica	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196304	OLICH2234-15	MK812550	
Cetraria islandica	Lecanorales	NO, Sør-Trøndelag, 2017, E. Timdal	O-L-208279	OLICH4164-17	MK812647	
Cetraria islandica	Lecanorales	NO, Sør-Trøndelag, 2017, E. Timdal	O-L-208278	OLICH4165-17	MK812026	
Cetraria islandica	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184703	OLICH885-13	MK812121	

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Cetraria muricata	Lecanorales	NO, Hordaland, 2014, E. Timdal	O-L-195799	OLICH1671-14	MK812154	
Cetraria muricata	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-195815	OLICH2187-15	MK812716	
Cetraria nigricans	Lecanorales	NO, Troms, 2012, J.T. Klepsland	O-L-186197	OLICH1436-14	MK812225	
Cetraria nigricans	Lecanorales	NO, Finnmark, 2011, E. Timdal	O-L-170662	OLICH2159-15	MK812613	
Cetraria odontella	Lecanorales	NO, Buskerud, 2012, T.H. Hofton	O-L-194457	OLICH1485-14	MK812629	
Cetraria sepincola	Lecanorales	NO, Hedmark, 2013, R. Haugan	O-L-190020	OLICH1463-14	MK812418	
Cetraria sepincola	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200881	OLICH2538-16	MK812133	
Cetraria sepincola	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184705	OLICH886-13	MK811790	
Cetrariella commixta	Lecanorales	NO, Finnmark, 2014, M. Westberg	O-L-195926	OLICH1771-14	KY266843	
Cetrariella delisei	Lecanorales	NO, Oppland, 2013, R. Haugan	O-L-190044	OLICH1465-14	MK812542	
Cetrariella delisei	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195559	OLICH1517-14	KY266903	
Cetrariella delisei	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195763	OLICH1635-14	KY266858	

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Cetrariella delisei	Lecanorales	NO, Finnmark, 2014, M. Westberg	O-L-195882	OLICH1727-14	KY266955	
Cetrariella delisei	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195946	OLICH1791-14	KY266892	
Cetrariella delisei	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200893	OLICH2546-16	MK811762	
Cetrariella fastigiata	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195560	OLICH1518-14	KY266875	
Cetrariella fastigiata	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195762	OLICH1634-14	KY266870	
Cetrariella fastigiata	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195985	OLICH1830-14	KY266890	
Cetrariella fastigiata	Lecanorales	NO, Finnmark, 2011, E. Timdal	O-L-170481	OLICH2154-15	MK811637	
Cetrariella fastigiata	Lecanorales	NO, Troms, 2011, J.T. Klepsland	O-L-177156	OLICH2155-15	MK812493	
Cetrelia cetrarioides	Lecanorales	NO, Telemark, 2005, S. Reiso	O-L-141329	OLICH1354-14	MK811823	anziaic acid (minor), atranorin (major), perlatolic acid (major), 4-O-methylolivetoric acid (minor)
Cetrelia cetrarioides	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-176836	OLICH1395-14	MK812086	anziaic acid (minor), atranorin (major), perlatolic acid (major), 4-O-methylolivetoric acid (minor)

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Cetrelia cetrarioides	Lecanorales	NO, Sogn og Fjordane, 2009, T.H. Hofton	O-L-186891	OLICH1453-14	MK812180	anziaic acid (minor), atranorin (major), perlatolic acid (major), 4-O-methylolivetoric acid (minor)
Cetrelia cetrarioides	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200022	OLICH2470-16	MK812062	anziaic acid (minor), atranorin (major), perlatolic acid (major), 4-O-methylolivetoric acid (minor)
Cetrelia cetrarioides	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201355	OLICH2740-16	MK812302	anziaic acid (minor), atranorin (major), perlatolic acid (major), 4-O-methylolivetoric acid (minor)
Cetrelia cetrarioides	Lecanorales	NO, Buskerud, 2016, M. Bendiksby & E. Timdal	O-L-208029	OLICH4257-17	MK812008	anziaic acid (minor), atranorin (major), perlatolic acid (major), 4-O-methylolivetoric acid (minor)
Cetrelia monachorum	Lecanorales	NO, Buskerud, 2012, T.H. Hofton	O-L-194448	OLICH4095-17	MK811729	anziaic acid (minor), atranorin (major), imbricaric acid (major), 4-O-denmethylimbricaric acid (minor)
Chaenotheca chlorella	Coniocybales	NO, Sør-Trøndelag, 2014, S. Vatne	O-L-200765	OLICH2447-16	MK812013	
Chaenotheca ferruginea	Coniocybales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200838	OLICH2426-16	MK812287	

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Chaenotheca gracilenta	Coniocybales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201318	OLICH2790-16	MK812452	
Chaenotheca gracillima	Coniocybales	NO, Sør-Trøndelag, 2014, S. Vatne	O-L-200773	OLICH2446-16	MK812119	
Cladonia albonigra	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195659	OLICH1999-15	MK812147	
Cladonia amaurocraea	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195776	OLICH1648-14	MK811717	
Cladonia amaurocraea	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195877	OLICH1722-14	KY266961	
Cladonia amaurocraea	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196364	OLICH1923-15	MK812471	
Cladonia amaurocraea	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196316	OLICH2246-15	MK811885	
Cladonia arbuscula	Lecanorales	NO, Finnmark, 2014, A. Kosuthova	O-L-195866	OLICH1711-14	KY266933	
Cladonia arbuscula	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196358	OLICH1917-15	MK812466	
Cladonia arbuscula	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-196268	OLICH1943-15	MK811810	
Cladonia arbuscula	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196301	OLICH2231-15	MK812036	

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Cladonia arbuscula	Lecanorales	NO, Vestfold, 2015, E. Timdal	O-L-198942	OLICH2497-16	MK811763	
Cladonia bellidiflora	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195740	OLICH1612-14	KY266902	
Cladonia bellidiflora	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195881	OLICH1726-14	KY266913	
Cladonia bellidiflora	Lecanorales	NO, Finnmark, 2014, A. Kosuthova	O-L-195906	OLICH1751-14	KY266845	
Cladonia bellidiflora	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195958	OLICH1803-14	KY266921	
Cladonia caespiticia	Lecanorales	NO, Østfold, 2012, J.T. Klepsland	O-L-186036	OLICH1420-14	MK811962	
Cladonia caespiticia	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200916	OLICH2576-16	MK812605	
Cladonia caespiticia	Lecanorales	NO, Hordaland, 2011, J.T. Klepsland	O-L-183605	OLICH4081-17	MK811712	
Cladonia cariosa	Lecanorales	NO, Buskerud, 2012, E.W. Hanssen et al.	O-L-186370	OLICH1443-14	MK811826	
Cladonia cariosa	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184343	OLICH743-13	MK812622	
Cladonia carneola	Lecanorales	NO, Finnmark, 2014, A. Kosuthova	O-L-195963	OLICH1808-14	KY266855	
Cladonia cenotea	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196307	OLICH2237-15	MK811749	

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Cladonia cenotea	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-198892	OLICH2393-16	MK812468	
Cladonia cenotea	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-207986	OLICH3824-17	MK812541	
Cladonia cenotea	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201300	OLICH3855-17	MK812267	
Cladonia cenotea	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184714	OLICH932-13	MK812699	
Cladonia chlorophaea	Lecanorales	NO, Buskerud, 2016, S. Rui & E. Timdal	O-L-208034	OLICH4262-17	MK812242	
Cladonia coccifera	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195895	OLICH1740-14	KY266935	
Cladonia coniocraea	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196310	OLICH2240-15	MK812094	
Cladonia coniocraea	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200908	OLICH2569-16	MK812138	
Cladonia cornuta	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196260	OLICH2267-15	MK812497	
Cladonia cornuta	Lecanorales	NO, Hedmark, 2015, E. Timdal	O-L-200857	OLICH2508-16	MK812414	
Cladonia cornuta	Lecanorales	NO, Hedmark, 2016, E. Timdal	O-L-201516	OLICH3979-17	MK811731	
Cladonia cornuta	Lecanorales	NO, Telemark, 2017, E. Timdal	O-L-208059	OLICH4167-17	MK812047	

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Cladonia cornuta	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184715	OLICH933-13	MK812277	
Cladonia crispata	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195880	OLICH1725-14	KY266865	
Cladonia crispata	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195824	OLICH2196-15	MK811863	
Cladonia crispata	Lecanorales	NO, Telemark, 2016, S. Rui & E. Timdal	O-L-205005	OLICH3995-17	MK811728	
Cladonia crispata	Lecanorales	NO, Vest-Agder, 2016, S. Rui & E. Timdal	O-L-204984	OLICH3996-17	MK812514	
Cladonia crispata	Lecanorales	NO, Telemark, 2017, E. Timdal	O-L-208058	OLICH4275-17	MK811707	
Cladonia cyanipes	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195758	OLICH1630-14	KY266889	
Cladonia cyanipes	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195981	OLICH1826-14	KY266977	
Cladonia cyathomorpha	Lecanorales	NO, Vest-Agder, 2012, J.T. Klepsland	O-L-186087	OLICH1430-14	MK811836	
Cladonia cyathomorpha	Lecanorales	NO, Aust-Agder, 2010, J.T. Klepsland	O-L-175272	OLICH2147-15	MK811648	
Cladonia decorticata	Lecanorales	SE, Torne Lappmark, 2014, E. Timdal	O-L-195679	OLICH2006-15	MK811738	

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Cladonia ecmocyna	Lecanorales	NO, Hordaland, 2014, E. Timdal	O-L-195793	OLICH1665-14	MK812344	
Cladonia ecmocyna	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195956	OLICH1801-14	KY266972	
Cladonia ecmocyna	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200933	OLICH2559-16	MK812085	
Cladonia fimbriata	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195743	OLICH1615-14	KY266953	
Cladonia fimbriata	Lecanorales	NO, Vest-Agder, 2011, J.T. Klepsland	O-L-183619	OLICH2145-15	MK812488	fumarprotocetraric acid
Cladonia fimbriata	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200909	OLICH2570-16	MK811629	
Cladonia furcata	Lecanorales	NO, Buskerud, 2011, K.A. Lye & T. Høitomt	O-L-194749	OLICH1492-14	MK811985	
Cladonia furcata	Lecanorales	NO, Finnmark, 2014, T. Tønsberg	O-L-195964	OLICH1809-14	KY266930	
Cladonia furcata	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196298	OLICH2228-15	MK812624	
Cladonia furcata	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196308	OLICH2238-15	MK811830	
Cladonia furcata	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201273	OLICH3847-17	MK812251	
Cladonia gracilis	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195764	OLICH1636-14	KY266906	

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Cladonia gracilis	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196359	OLICH1918-15	MK812362	
Cladonia gracilis	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196321	OLICH2251-15	MK811813	
Cladonia gracilis	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196262	OLICH2269-15	MK811638	
Cladonia gracilis	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196047	OLICH3802-17	MK812342	
Cladonia grayi	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195757	OLICH1629-14	KY266978	
Cladonia krogiana	Lecanorales	NO, Telemark, 2003, B.P. Løfall & A. Ognedal	O-L-127158	OLICH1337-14	MK811907	barbatic acid, chlorovinetorin
Cladonia krogiana	Lecanorales	NO, Akershus, 2004, B.P. Løfall	O-L-129021	OLICH1339-14	MK811663	barbatic acid, chlorovinetorin
Cladonia krogiana	Lecanorales	NO, Akershus, 2012, J.T. Klepsland	O-L-186068	OLICH2136-15	MK812057	
Cladonia macrophylla	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-200002	OLICH1976-15	MK811782	
Cladonia macrophylla	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200021	OLICH2469-16	MK812683	
Cladonia macrophyllodes	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196379	OLICH1938-15	MK812614	

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Cladonia maxima	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195829	OLICH2201-15	MK811693	
Cladonia maxima	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184361	OLICH692-13	MK812518	
Cladonia mitis	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184706	OLICH887-13	MK811894	
Cladonia parasitica	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-207988	OLICH3825-17	MK811639	
Cladonia parasitica	Lecanorales	NO, Hedmark, 2016, E. Timdal	O-L-201525	OLICH3989-17	MK812470	
Cladonia phyllophora	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196375	OLICH1934-15	MK812644	
Cladonia phyllophora	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196320	OLICH2250-15	MK812551	
Cladonia pleurota	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195959	OLICH1804-14	KY266968	usnic acid, zeorin
Cladonia pulvinata	Lecanorales	NO, Sør-Trøndelag, 2015, H. Holien	TRH-L-16327	OLICH2920-16	MK811846	fumarprotocetraric acid, psoromic acid
Cladonia pyxidata	Lecanorales	NO, Østfold, 2012, J.T. Klepsland	O-L-186049	OLICH1425-14	MK812571	fumarprotocetraric acid
Cladonia pyxidata	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195914	OLICH1759-14	KY266877	fumarprotocetraric acid (major), protocetraric acid (minor)

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Cladonia pyxidata	Lecanorales	NO, Oslo, 2014, S. Rui & E. Timdal	O-L-196073	OLICH1889-14	MK812676	
Cladonia rangiferina	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195755	OLICH1627-14	KY266884	
Cladonia rangiferina	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195774	OLICH1646-14	MK811970	
Cladonia rangiferina	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196302	OLICH2232-15	MK812460	
Cladonia rangiferina	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196037	OLICH3806-17	MK811708	
Cladonia rangiferina	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201298	OLICH3854-17	MK812260	
Cladonia rangiformis	Lecanorales	NO, Telemark, 2012, S. Reiso	O-L-194209	OLICH2062-15	MK812118	atranorin
Cladonia rangiformis	Lecanorales	NO, Rogaland, 2013, J.T. Klepsland	O-L-198309	OLICH2351-15	MK811656	
Cladonia rei	Lecanorales	NO, Telemark, 2014, S. Rui & E. Timdal	O-L-194142	OLICH1479-14	MK811774	
Cladonia rei	Lecanorales	NO, Oslo, 2014, J.T. Klepsland	O-L-200262b	OLICH4086-17	MK812389	fumarprotocetraric acid, homosekikaic acid
Cladonia squamosa	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184733	OLICH1415-14	MK812303	
Cladonia squamosa	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195646	OLICH1558-14	MK811958	

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Cladonia squamosa	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195909	OLICH1754-14	KY266973	
Cladonia squamosa	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196309	OLICH2239-15	MK812360	
Cladonia stellaris	Lecanorales	NO, Finnmark, 2014, A. Kosuthova	O-L-195905	OLICH1750-14	KY266887	
Cladonia stellaris	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196263	OLICH2270-15	MK812506	
Cladonia stellaris	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184707	OLICH926-13	MK812280	
Cladonia straminea	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195976	OLICH1821-14	KY266880	
Cladonia strepsilis	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-200000	OLICH1974-15	MK812544	
Cladonia strepsilis	Lecanorales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208340	OLICH4270-17	MK812494	
Cladonia stygia	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-196269	OLICH1944-15	MK812684	
Cladonia stygia	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196303	OLICH2233-15	MK812337	
Cladonia stygia	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184708	OLICH927-13	MK812669	
Cladonia subcervicornis	Lecanorales	NO, Rogaland, 2013, S. Vatne	O-L-194122	OLICH2072-15	MK812018	

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Cladonia subcervicornis	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196028	OLICH3794-17	MK812661	
Cladonia subcervicornis	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196053	OLICH3811-17	MK812155	
Cladonia subcervicornis	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-204985	OLICH3998-17	MK811825	
Cladonia subcervicornis	Lecanorales	NO, Vest-Agder, 2011, J.T. Klepsland	O-L-176962	OLICH4113-17	MK812379	
Cladonia subfurcata	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195987	OLICH1832-14	KY266923	
Cladonia subfurcata	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196319	OLICH2249-15	MK812649	
Cladonia subfurcata	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200934	OLICH2560-16	MK812597	
Cladonia subulata	Lecanorales	NO, Sør-Trøndelag, 2013, R. Haugan	O-L-190281	OLICH1471-14	MK812581	
Cladonia subulata	Lecanorales	FI, Inarin Lappi, 2014, E. Timdal	O-L-195490	OLICH1500-14	MK811811	
Cladonia subulata	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196299	OLICH2229-15	MK812279	
Cladonia subulata	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200914	OLICH2574-16	MK811787	

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Cladonia sulphurina	Lecanorales	NO, Finnmark, 2014, A. Kosuthova	O-L-195911	OLICH1756-14	KY266846	
Cladonia symphycarpa	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195597	OLICH1535-14	MK811971	atranorin
Cladonia turgida	Lecanorales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-199980	OLICH1954-15	MK811657	
Cladonia turgida	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200932	OLICH2558-16	MK812027	
Cladonia uncialis	Lecanorales	NO, Østfold, 2013, R. Haugan	O-L-190182	OLICH1467-14	MK812589	
Cladonia uncialis	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195939	OLICH1784-14	KY266974	
Cladonia verticillata	Lecanorales	NO, Hordaland, 2014, E. Timdal	O-L-195797	OLICH1669-14	MK812461	
Cladonia verticillata	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196312	OLICH2242-15	MK811806	
Cladonia verticillata	Lecanorales	NO, Sør-Trøndelag, 2015, H. Holien	TRH-L-16326	OLICH2921-16	MK812385	fumarprotocetraric acid
Cladonia zopfii	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196044	OLICH3804-17	MK811805	
Coccotrema citrinescens	Pertusariales	NO, Nordland, 2015, T. Tønsberg & A. Botnen	BG-L-99172	OLICH3741-17	MK811814	

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Coccotrema citrinescens	Pertusariales	NO, Nordland, 2015, T. Tønsberg	BG-L-98897	OLICH3754-17	MK811895	
Coccotrema citrinescens	Pertusariales	NO, Møre og Romsdal, 2015, T. Tønsberg & Z. Palice	BG-L-99069	OLICH3774-17	MK812329	
Coccotrema citrinescens	Pertusariales	NO, Nordland, 2013, J.T. Klepsland	O-L-198020	OLICH4212-17	MK812183	
Coccotrema citrinescens	Pertusariales	NO, Sør-Trøndelag, 2011, R. Haugan	O-L-173864	OLICH4403-17	MK812186	stictic acid
Cornicularia normoerica	Lecanorales	NO, Aust-Agder, 2014, J.T. Klepsland	O-L-200754	OLICH2603-16	MK812042	
Cornicularia normoerica	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201280	OLICH3850-17	MK811980	
Cystocoleus ebeneus	Capnodiales	NO, Sør-Trøndelag, 1998, R. Haugan	O-L-55770	OLICH3942-17	MK811795	
Dactylina ramulosa	Lecanorales	NO, Troms, 2012, J.T. Klepsland	O-L-186199	OLICH1438-14	MK812632	
Dendrographa latebrarum	Arthoniales	NO, Møre og Romsdal, 2016, H. Holien	TRH-L-16972	OLICH3682-17	MK811843	
Dermatocarpon bachmannii	Verrucariales	NO, Østfold, 2000, B. P. Løfall et al.	O-L-78257	OLICH2297-15	MK812540	

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Dermatocarpon bachmannii	Verrucariales	NO, Østfold, 2005, B. P. Løfall	O-L-147654	OLICH2305-15	MK812444	
Dermatocarpon deminuens	Verrucariales	NO, Østfold, 2000, B. P. Løfall	O-L-78264	OLICH2298-15	MK812502	
Dermatocarpon deminuens	Verrucariales	NO, Østfold, 1998, B. P. Løfall	O-L-36303	OLICH2299-15	MK812476	
Dermatocarpon deminuens	Verrucariales	NO, Østfold, 2000, B. P. Løfall et al.	O-L-78258	OLICH2304-15	MK812075	
Dermatocarpon luridum	Verrucariales	NO, Buskerud, 2009, T.H. Hofton	O-L-187021	OLICH1455-14	MK812236	
Dermatocarpon meiophyllizium	Verrucariales	NO, Østfold, 2006, B. P. Løfall	O-L-147725	OLICH2296-15	MK812273	
Dermatocarpon meiophyllizium	Verrucariales	NO, Hedmark, 2006, R. Haugan	O-L-145251	OLICH2300-15	MK812522	
Dermatocarpon meiophyllizium	Verrucariales	NO, Østfold, 2001, B. P. Løfall	O-L-105979	OLICH2306-15	MK811820	
Dermatocarpon miniatum	Verrucariales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196009	OLICH1854-14	MK812245	
Dibaeis baeomyces	Pertusariales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200009	OLICH1983-15	MK812560	
Dibaeis baeomyces	Pertusariales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201296	OLICH2796-16	MK812219	

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Diploschistes scruposus	Ostropales	NO, Finnmark, 2014, S. Fernandez	O-L-195913	OLICH1758-14	KY266920	
Diploschistes scruposus	Ostropales	NO, Aust-Agder, 2013, J.T. Klepsland	O-L-198319	OLICH2350-15	MK811671	
Diplotomma alboatrum	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195577	OLICH1527-14	MK812220	
Eopyrenula leucoplaca	Vezdaeales	NO, Telemark, 2016, J.T. Klepsland	O-L-206771	OLICH3490-17	MK811948	
Epilichen glauconigellus	Rhizocarpales	NO, Oppland, 2012, S. Rui & E. Timdal	O-L-179907	OLICH1100-14	MK812566	
Epilichen glauconigellus	Rhizocarpales	NO, Troms, 2003, R. Haugan	O-L-141634	OLICH1101-14	MK811705	
Epilichen scabrosus	Rhizocarpales	NO, Hedmark, 2012, S. Rui & E. Timdal	O-L-179955	OLICH1102-14	MK812558	
Epilichen scabrosus	Rhizocarpales	NO, Troms, 2009, J.T. Klepsland	O-L-164936	OLICH832-13	MK812386	
Evernia divaricata	Lecanorales	NO, Buskerud, 2011, T.H. Hofton	O-L-194431	OLICH1484-14	MK812536	
Evernia divaricata	Lecanorales	NO, Oppland, 2012, T.H. Hofton	O-L-194526	OLICH2315-15	MK811891	
Evernia mesomorpha	Lecanorales	NO, Hedmark, 2012, T.H. Hofton	O-L-194511	OLICH1489-14	MK812555	
Evernia mesomorpha	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200008	OLICH1982-15	MK811689	

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Evernia mesomorpha	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-176825	OLICH2308-15	MK811679	
Evernia mesomorpha	Lecanorales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200526	OLICH2614-16	MK812464	
Evernia prunastri	Lecanorales	NO, Oslo, 2014, S. Rui & E. Timdal	O-L-196076	OLICH1892-14	MK811993	
Evernia prunastri	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-199988	OLICH1962-15	MK812247	
Evernia prunastri	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196292	OLICH2222-15	MK812058	
Evernia prunastri	Lecanorales	NO, Hedmark, 2015, E. Timdal	O-L-200856	OLICH2507-16	MK811838	
Evernia prunastri	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200923	OLICH2531-16	MK811722	
Flavocetraria cucullata	Lecanorales	NO, Østfold, 2013, B.P. Løfall	O-L-187362	OLICH1459-14	MK812129	
Flavocetraria cucullata	Lecanorales	NO, Finnmark, 2014, S. Rui	O-L-195752	OLICH1624-14	KY266924	
Flavocetraria cucullata	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195778	OLICH1650-14	MK811878	
Flavocetraria cucullata	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196338	OLICH2276-15	MK812660	
Flavocetraria cucullata	Lecanorales	NO, Svalbard, 2015, S. Rui	O-L-203288	OLICH2707-16	MK812458	

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Flavocetraria cucullata	Lecanorales	NO, Buskerud, 2015, E. Timdal & S. Rui	O-L-200903	OLICH3838-17	MK812490	
Flavocetraria cucullata	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184721	OLICH938-13	MK812603	
Flavocetraria nivalis	Lecanorales	NO, Østfold, 2013, B.P. Løfall	O-L-187361	OLICH1458-14	MK812252	
Flavocetraria nivalis	Lecanorales	NO, Finnmark, 2014, S. Rui	O-L-195723	OLICH1595-14	KY266896	
Flavocetraria nivalis	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195777	OLICH1649-14	MK811972	
Flavocetraria nivalis	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196311	OLICH2241-15	MK811652	
Flavocetraria nivalis	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196339	OLICH2277-15	MK812419	
Flavocetraria nivalis	Lecanorales	NO, Svalbard, 2015, S. Rui	O-L-203283	OLICH2702-16	MK811681	
Flavocetraria nivalis	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-207989	OLICH3829-17	MK812064	
Flavocetraria nivalis	Lecanorales	NO, Buskerud, 2015, E. Timdal & S. Rui	O-L-200902	OLICH3837-17	MK812356	
Flavoparmelia soredians	Lecanorales	NO, Rogaland, 2013, E. Nygaard	BG-L-98015	OLICH2437-16	MK812200	
Flavoplaca citrina	Teloschistales	NO, Nord-Trøndelag, 2015, V. Alstrup	O-L-201322	OLICH2845-16	MK811952	

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Flavoplaca citrina	Teloschistales	NO, Sør-Trøndelag, 2015, R. Haugan	O-L-204037	OLICH3891-17	MK812194	
Flavoplaca flavocitrina	Teloschistales	NO, Hedmark, 2015, R. Haugan	O-L-204199	OLICH3887-17	MK811821	
Flavoplaca marina	Teloschistales	NO, Rogaland, 2010, J.T. Klepsland	O-L-200087	OLICH3206-16	MK811686	
Flavoplaca marina	Teloschistales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200616	OLICH3207-16	MK811757	
Frutidella caesioatra	Lecanorales	NO, Troms, 2014, J.T. Klepsland	O-L-200359	OLICH3257-16	MK812163	
Frutidella caesioatra	Lecanorales	NO, Sogn og Fjordane, 2010, E. Timdal	O-L-163395	OLICH387-13	MK811625	
Frutidella caesioatra	Lecanorales	NO, Nordland, 2010, E. Timdal	O-L-163746	OLICH388-13	MK812446	
Frutidella caesioatra	Lecanorales	NO, Nordland, 2010, E. Timdal	O-L-163752	OLICH390-13	MK812346	
Frutidella caesioatra	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184399	OLICH657-13	MK812561	
Fuscidea mollis	Umbilicariales	NO, Finnmark, 2014, M. Westberg	O-L-195707	OLICH1579-14	KY266980	divaricatic acid
Fuscidea mollis	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195917	OLICH1762-14	KY266834	divaricatic acid

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Fuscopannaria ahlneri	Peltigerales	NO, Nordland, 2008, T.H. Hofton	O-L-186679	OLICH2464-16	MK812382	
Fuscopannaria confusa	Peltigerales	NO, Nordland, 2013, J.T. Klepsland	O-L-198017	OLICH2465-16	MK812003	
Fuscopannaria ignobilis	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201286	OLICH2675-16	MK811940	
Fuscopannaria ignobilis	Peltigerales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201281	OLICH2778-16	MK812023	
Fuscopannaria ignobilis	Peltigerales	NO, Sør-Trøndelag, 2015, H. Holien	TRH-L-16696	OLICH3629-17	MK812459	
Fuscopannaria ignobilis	Peltigerales	NO, Sør-Trøndelag, 2012, H. Fjeldstad	O-L-203080	OLICH4062-17	MK812103	
Fuscopannaria mediterranea	Peltigerales	NO, Sogn og Fjordane, 2013, J.T. Klepsland	O-L-197869	OLICH2096-15	MK812182	
Fuscopannaria mediterranea	Peltigerales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199530	OLICH3166-16	MK811995	
Fuscopannaria praetermissa	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-196265	OLICH1940-15	MK812190	
Fuscopannaria praetermissa	Peltigerales	NO, Nordland, 2013, J.T. Klepsland	O-L-198031	OLICH2097-15	MK811734	

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Fuscopannaria praetermissa	Peltigerales	NO, Finnmark, 2003, E. Timdal	O-L-123194	OLICH3883-17	MK812710	
Fuscopannaria praetermissa	Peltigerales	NO, Troms, 2009, J.T. Klepsland	O-L-174932	OLICH3884-17	MK811837	
Gyalecta flotowii	Ostropales	NO, Hordaland, 2013, J.B. Jordal	O-L-199472	OLICH3165-16	MK811791	
Gyalecta flotowii	Ostropales	NO, Sogn og Fjordane, 2013, H. Fjeldstad	O-L-203030	OLICH4063-17	MK811730	
Gyalecta foveolaris	Ostropales	NO, Finnmark, 2014, T.B. Wheeler	O-L-195735	OLICH1607-14	KY266833	
Gyalecta friesii	Ostropales	NO, Sør-Trøndelag, 2014, S. Vatne	O-L-200781	OLICH2442-16	MK812083	
Gyalecta geoica	Ostropales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200544	OLICH3164-16	MK811956	
Gyalecta jenensis	Ostropales	NO, Finnmark, 2014, M. Westberg	O-L-195708	OLICH1580-14	KY266916	
Gyalecta jenensis	Ostropales	NO, Finnmark, 2014, A. Millanes	O-L-195860	OLICH1705-14	KY266964	
Gyalecta jenensis	Ostropales	NO, Nordland, 2013, J.T. Klepsland	O-L-198022	OLICH4034-17	MK811684	
Gyalecta ulmi	Ostropales	NO, Sør-Trøndelag, 2014, S. Vatne	O-L-200778	OLICH2443-16	MK812657	

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Gyalolechia bracteata	Teloschistales	NO, Finnmark, 2011, E. Timdal	O-L-170861	OLICH3215-16	MK811756	
Gyalolechia flavorubescens	Teloschistales	NO, Telemark, 2014, E. Timdal	O-L-195786	OLICH1658-14	MK811715	
Gyrographa gyrocarpa	Arthoniales	NO, Nord-Trøndelag, 2015, H. Holien	TRH-L-16879	OLICH3651-17	MK812164	
Gyrographa gyrocarpa	Arthoniales	NO, Aust-Agder, 2015, J.T. Klepsland	O-L-204523	OLICH4234-17	MK812125	
Haematomma ochroleucum	Lecanorales	NO, Hordaland, 2015, T. Tønsberg	BG-L-99143	OLICH3704-17	MK812424	
Haematomma ochroleucum	Lecanorales	NO, Nordland, 2015, T. Tønsberg	BG-L-99181	OLICH3749-17	MK812361	
Haematomma ochroleucum	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196048	OLICH3817-17	MK812222	
Halecania alpivaga	Leprocaulales	NO, Finnmark, 2014, M. Westberg	O-L-195847	OLICH1692-14	KY266832	
Hertelidea botryosa	Lecanorales	NO, Hedmark, 2016, E. Timdal	O-L-201530	OLICH3988-17	MK811999	
Hertelidea botryosa	Lecanorales	NO, Sør-Trøndelag, 2007, E. Timdal	O-L-158480	OLICH415-13	MK812335	
Heterodermia speciosa	Caliciales	NO, Buskerud, 2009, T.H. Hofton	O-L-186983	OLICH1454-14	MK812396	

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Heterodermia speciosa	Caliciales	NO, Oppland, 2011, J.T. Klepsland	O-L-176833	OLICH2287-15	MK812055	
Heterodermia speciosa	Caliciales	NO, Oppland, 2011, J.T. Klepsland	O-L-176831	OLICH2288-15	MK812697	
Heterodermia speciosa	Caliciales	NO, Oppland, 2011, J.T. Klepsland	O-L-176827	OLICH2290-15	MK812504	
Heterodermia speciosa	Caliciales	NO, Oppland, 2011, T. Høitomt et al.	O-L-176666	OLICH2291-15	MK812537	
Heterodermia speciosa	Caliciales	NO, Oppland, 2011, J.T. Klepsland	O-L-176840	OLICH2292-15	MK812549	
Heterodermia speciosa	Caliciales	NO, Oppland, 2011, J.T. Klepsland	O-L-176824	OLICH2293-15	MK811755	
Heterodermia speciosa	Caliciales	NO, Hedmark, 2011, R. Haugan	O-L-173228	OLICH2294-15	MK812405	
Hypocenomyce scalaris	Umbilicariales	SE, Dalarna, 2014, E. Timdal	O-L-195692	OLICH2014-15	MK812269	
Hypocenomyce scalaris	Umbilicariales	NO, Telemark, 2013, J.T. Klepsland	O-L-198107	OLICH2352-15	MK811723	
Hypocenomyce scalaris	Umbilicariales	NO, Telemark, 2013, J.T. Klepsland	O-L-198111	OLICH2366-15	MK812170	
Hypocenomyce scalaris	Umbilicariales	NO, Hedmark, 2016, E. Timdal	O-L-201526	OLICH3987-17	MK811809	
Hypocenomyce scalaris	Umbilicariales	SE, Jämtland, 2017, E. Timdal	O-L-208182	OLICH4285-17	MK812211	

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Hypogymnia austerodes	Lecanorales	NO, Hedmark, 2013, R. Haugan	O-L-190094	OLICH1466-14	MK812650	
Hypogymnia austerodes	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196349	OLICH1908-15	MK812410	
Hypogymnia austerodes	Lecanorales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200537	OLICH2613-16	MK812531	
Hypogymnia bitteri	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184690	OLICH874-13	MK811649	
Hypogymnia farinacea	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196258	OLICH2265-15	MK811676	
Hypogymnia farinacea	Lecanorales	NO, Hedmark, 2010, R. Haugan	O-L-183979	OLICH2279-15	MK812081	
Hypogymnia farinacea	Lecanorales	NO, Hedmark, 2010, R. Haugan	O-L-183983	OLICH2280-15	MK812607	
Hypogymnia farinacea	Lecanorales	NO, Hedmark, 2010, R. Haugan	O-L-183984	OLICH2281-15	MK812314	
Hypogymnia farinacea	Lecanorales	NO, Hedmark, 2011, R. Haugan	O-L-174340	OLICH2283-15	MK812440	
Hypogymnia farinacea	Lecanorales	NO, Hedmark, 2010, R. Haugan	O-L-183985	OLICH2285-15	MK812305	
Hypogymnia farinacea	Lecanorales	NO, Buskerud, 2013, J.T. Klepsland	O-L-198103	OLICH2369-15	MK812704	

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Hypogymnia farinacea	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201310	OLICH2785-16	MK811721	
Hypogymnia hultenii	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201260	OLICH2767-16	MK811640	
Hypogymnia incurvoides	Lecanorales	NO, Rogaland, 2012, J.T. Klepsland	O-L-186120	OLICH1433-14	MK811919	atranorin, physodalic acid, physodic acid, protocetraric acid (minor)
Hypogymnia incurvoides	Lecanorales	NO, Rogaland, 2012, J.T. Klepsland	O-L-186139	OLICH1435-14	MK812392	atranorin, physodalic acid, physodic acid, protocetraric acid (minor)
Hypogymnia incurvoides	Lecanorales	NO, Nord-Trøndelag, 2014, J.T. Klepsland	O-L-200733	OLICH2620-16	MK812655	atranorin, physodalic acid, physodic acid
Hypogymnia incurvoides	Lecanorales	NO, Hordaland, 2014, J.T. Klepsland	O-L-200683	OLICH3161-16	MK812638	atranorin, physodalic acid, physodic acid
Hypogymnia physodes	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195888	OLICH1733-14	KY266854	
Hypogymnia physodes	Lecanorales	NO, Finnmark, 2014, M. Westberg	O-L-195921	OLICH1766-14	KY266919	
Hypogymnia physodes	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200883	OLICH2565-16	MK811818	

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Hypogymnia physodes	Lecanorales	NO, Hordaland, 2014, J.T. Klepsland	O-L-200741	OLICH2621-16	MK812700	3-hydroxyphysodic acid, atranorin, physodalic acid, physodic acid
Hypogymnia physodes	Lecanorales	NO, Nord-Trøndelag, 2014, J.T. Klepsland	O-L-200731	OLICH3158-16	MK812007	3-hydroxyphysodic acid, atranorin, physodalic acid, physodic acid
Hypogymnia physodes	Lecanorales	NO, Nordland, 2014, J.T. Klepsland	O-L-200736	OLICH3159-16	MK812416	3-hydroxyphysodic acid, atranorin, physodalic acid, physodic acid
Hypogymnia physodes	Lecanorales	NO, Akershus, 2014, J.T. Klepsland	O-L-200255	OLICH3160-16	MK812648	
Hypogymnia physodes	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184691	OLICH875-13	MK812139	
Hypogymnia tubulosa	Lecanorales	NO, Telemark, 2014, S. Rui & E. Timdal	O-L-194145	OLICH1480-14	MK811733	
Hypogymnia tubulosa	Lecanorales	NO, Rogaland, 2015, T. Tønsberg & E. Nygaard	BG-L-98167	OLICH3698-17	MK812120	
Hypogymnia tubulosa	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184692	OLICH876-13	MK811664	
Hypogymnia vittata	Lecanorales	NO, Buskerud, 2008, G. Gaarder	O-L-155319	OLICH1368-14	MK811984	
Hypogymnia vittata	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195648	OLICH1560-14	MK812063	
Hypogymnia vittata	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200917	OLICH2577-16	MK812228	

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Hypogymnia vittata	Lecanorales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200536	OLICH2612-16	MK812445	atranorin, physodic acid, vittatolic acid
Hypogymnia vittata	Lecanorales	NO, Akershus, 2017, S. Rui & E. Timdal	O-L-206863	OLICH4108-17	MK812679	
Hypotrachyna afrorevoluta	Lecanorales	NO, Rogaland, 2011, J.T. Klepsland	O-L-176869	OLICH2182-15	MK812595	
Hypotrachyna afrorevoluta	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-205001	OLICH3991-17	MK811750	
Hypotrachyna laevigata	Lecanorales	NO, Rogaland, 2010, J.T. Klepsland	O-L-175129	OLICH1391-14	MK812534	
Hypotrachyna laevigata	Lecanorales	NO, Rogaland, 2011, J.T. Klepsland	O-L-176890	OLICH1397-14	MK812711	
Hypotrachyna revoluta	Lecanorales	NO, Rogaland, 2005, J.T. Klepsland	O-L-141145	OLICH1352-14	MK812078	
Hypotrachyna revoluta	Lecanorales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197837	OLICH2099-15	MK812441	
Hypotrachyna revoluta	Lecanorales	NO, Rogaland, 2011, T. Høitomt	O-L-176684	OLICH2183-15	MK812141	
Hypotrachyna revoluta	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-205002	OLICH3990-17	MK812580	
Hypotrachyna sinuosa	Lecanorales	NO, Rogaland, 2016, T. Tønsberg	BG-L-99501	OLICH3758-17	MK812199	
Icmadophila ericetorum	Pertusariales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184734	OLICH1416-14	MK812230	

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Icmadophila ericetorum	Pertusariales	NO, Finnmark, 2014, E. Timdal	O-L-195557	OLICH1515-14	KY266881	
Icmadophila ericetorum	Pertusariales	NO, Finnmark, 2014, H. Holien	O-L-195756	OLICH1628-14	KY266943	
Icmadophila ericetorum	Pertusariales	NO, Finnmark, 2014, T. Tønsberg	O-L-195874	OLICH1719-14	KY266876	
Icmadophila ericetorum	Pertusariales	NO, Nord-Trøndelag, 2015, H. Holien	TRH-L-16544	OLICH3627-17	MK811879	
Imshaugia aleurites	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-196257	OLICH2264-15	MK812672	
Japewia subaurifera	Lecanorales	NO, Nord-Trøndelag, 2012, T. Tønsberg	BG-L-94252	OLICH577-13	MK812331	
Japewia subaurifera	Lecanorales	NO, Finnmark, 2012, T. Tønsberg	BG-L-94707	OLICH578-13	MK812698	
Japewia subaurifera	Lecanorales	NO, Nordland, 2012, T. Tønsberg	BG-L-94659	OLICH596-13	MK812623	
Japewia tornoensis	Lecanorales	NO, Buskerud, 2009, J.T. Klepsland	O-L-165163	OLICH357-13	MK812546	
Japewia tornoensis	Lecanorales	NO, Buskerud, 2011, J.T. Klepsland	O-L-176857	OLICH358-13	MK812668	
Koerberiella wimmeriana	Lecideales	NO, Hordaland, 2010, E. Timdal	O-L-163472	OLICH414-13	MK812168	

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Lasallia pustulata	Umbilicariales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-204990	OLICH4001-17	MK811849	
Lecanactis abietina	Arthoniales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200836	OLICH2424-16	MK812703	
Lecanactis abietina	Arthoniales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201261	OLICH2768-16	MK811953	
Lecania aipospila	Lecanorales	NO, Finnmark, 2014, J.T. Klepsland	O-L-200506	OLICH3254-16	MK812577	
Lecania aipospila	Lecanorales	NO, Finnmark, 2003, E. Timdal	O-L-123172	OLICH3962-17	MK811636	
Lecania erysibe	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183713	OLICH3956-17	MK812191	
Lecanora atrosulphurea	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195558	OLICH1516-14	KY266931	
Lecanora intricata	Lecanorales	NO, Finnmark, 2014, U. Arup	O-L-195841	OLICH1686-14	KY266891	
Lecanora intricata	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195876	OLICH1721-14	KY266975	
Lecanora leptacina	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195896	OLICH1741-14	KY266950	
Lecidea auriculata	Lecideales	NO, Finnmark, 2014, E. Timdal	O-L-195916	OLICH1761-14	KY266956	no lichen substances

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Lecidea leucothallina	Lecideales	NO, Oppland, 2013, T. Tønsberg	BG-L-96170	OLICH1065-14	MG968256	pannarin (thallus)
Lecidea leucothallina	Lecideales	NO, Nordland, 2010, E. Timdal	O-L-163621	OLICH179-11	MG968259	pannarin (apothecium), no lichen substances (thallus)
Lecidea leucothallina	Lecideales	NO, Nordland, 2010, E. Timdal	O-L-163673	OLICH180-11	MG968258	pannarin (thallus)
Lecidea leucothallina	Lecideales	NO, Møre og Romsdal, 2010, R. Haugan	O-L-165815	OLICH181-11	MG968260	no lichen substances (thallus)
Lecidea toensbergii	Lecideales	NO, Oppland, 2013, T. Tønsberg	BG-L-95936	OLICH1010-13	MG968261	pannarin (thallus)
Lecidea toensbergii	Lecideales	NO, Møre og Romsdal, 2010, R. Haugan	O-L-165806	OLICH182-11	MG968257	pannarin (thallus)
Leprocaulon quisquiliare	Leprocaulales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200884	OLICH2566-16	MK812636	
Leprocaulon quisquiliare	Leprocaulales	NO, Akershus, 2015, S. Rui & E. Timdal	O-L-200816	OLICH2587-16	MK811899	
Leprocaulon quisquiliare	Leprocaulales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208334	OLICH4265-17	MK812206	
Leproplaca cirrochroa	Teloschistales	NO, Oppland, 2011, J.T. Klepsland	O-L-183714	OLICH4395-17	MK812049	
Leproplaca cirrochroa	Teloschistales	NO, Telemark, 2009, R. Haugan & S. Reiso	O-L-160423	OLICH4427-17	MK812423	

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Leproplaca cirrochroa	Teloschistales	NO, Nord-Trøndelag, 1998, R. Haugan, R. Hollas	O-L-44774	OLICH4428-17	MK812709	
Leproplaca obliterans	Teloschistales	NO, Akershus, 2013, J.T. Klepsland	O-L-197812	OLICH4426-17	MK812503	
Leptogium cochleatum	Peltigerales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199489	OLICH3149-16	MK812473	
Leptogium cochleatum	Peltigerales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199545	OLICH3150-16	MK811946	
Leptogium saturninum	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195592	OLICH1533-14	MK812662	
Leptogium saturninum	Peltigerales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199516	OLICH3250-16	MK812179	
Leptogium saturninum	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196046	OLICH3800-17	MK811641	
Letharia vulpina	Lecanorales	NO, Hedmark, 2012, R. Haugan	O-L-184032	OLICH1405-14	MK812266	unknown acid, vulpinic acid
Letharia vulpina	Lecanorales	NO, Hedmark, 2012, R. Haugan	O-L-184029	OLICH2179-15	MK812109	
Letharia vulpina	Lecanorales	NO, Hedmark, 2011, B. Skinderhaug	O-L-169053	OLICH2180-15	MK811718	

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Letharia vulpina	Lecanorales	NO, Hedmark, 2010, R. Haugan	O-L-165378	OLICH2181-15	MK811860	
Letharia vulpina	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-198890	OLICH2395-16	MK811758	
Lichenomphalia alpina	Agaricales	NO, Finnmark, 2014, H. Holien	O-L-195732	OLICH1604-14	KY266895	
Lichenomphalia velutina	Agaricales	NO, Oslo, 2014, E. Timdal	O-L-200004	OLICH1978-15	MK811822	
Lobaria amplissima	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196021	OLICH1866-14	MK812432	
Lobaria amplissima	Peltigerales	NO, Sør-Trøndelag, 2010, J.T. Klepsland	O-L-174993	OLICH2176-15	MK812486	
Lobaria amplissima	Peltigerales	NO, Sør-Trøndelag, 2013, J.T. Klepsland	O-L-198062	OLICH2326-15	MK811832	
Lobaria amplissima	Peltigerales	NO, Buskerud, 2011, T.H. Hofton	O-L-194379	OLICH2327-15	MK811802	
Lobaria amplissima	Peltigerales	NO, Sogn og Fjordane, 2010, T.H. Hofton	O-L-187118	OLICH2328-15	MK812689	
Lobaria amplissima	Peltigerales	NO, Sør-Trøndelag, 2011, J.T. Klepsland	O-L-176912	OLICH2329-15	MK812498	

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Lobaria amplissima	Peltigerales	NO, Nord-Trøndelag, 2012, J.T. Klepsland	O-L-186329	OLICH2330-15	MK811725	
Lobaria amplissima	Peltigerales	NO, Nord-Trøndelag, 2013, J.T. Klepsland	O-L-198158	OLICH2387-16	MK812569	
Lobaria amplissima	Peltigerales	NO, Nordland, 2003, A. Granmo & L. Molster	TROM_L_46394	OLICH3586-17	MK811901	
Lobaria linita	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195728	OLICH1600-14	KY266856	
Lobaria linita	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195892	OLICH1737-14	KY266932	
Lobaria pulmonaria	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196024	OLICH1869-14	MK811957	
Lobaria pulmonaria	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196356	OLICH1915-15	MK811682	
Lobaria pulmonaria	Peltigerales	NO, Østfold, 2013, O. Wergeland Krog	O-L-193007	OLICH2335-15	MK812447	
Lobaria pulmonaria	Peltigerales	NO, Østfold, 2012, O. Wergeland Krog et al.	O-L-193009	OLICH2336-15	MK812330	
Lobaria pulmonaria	Peltigerales	NO, Østfold, 2013, O. Wergeland Krog	O-L-193011	OLICH2337-15	MK812533	

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Lobaria pulmonaria	Peltigerales	NO, Hedmark, 2013, R. Haugan	O-L-190366	OLICH2338-15	MK812202	
Lobaria pulmonaria	Peltigerales	NO, Buskerud, 2011, T.H. Hofton & S. Reiso	O-L-194285	OLICH2339-15	MK812005	
Lobaria pulmonaria	Peltigerales	NO, Buskerud, 2012, T.H. Hofton	O-L-194456	OLICH2340-15	MK812631	
Lobaria pulmonaria	Peltigerales	NO, Vest-Agder, 2011, J.T. Klepsland	O-L-177093	OLICH2346-15	MK812031	
Lobaria pulmonaria	Peltigerales	NO, Hedmark, 2012, R. Haugan	O-L-183966	OLICH2347-15	MK812039	
Lobaria pulmonaria	Peltigerales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200863	OLICH2515-16	MK811954	
Lobaria pulmonaria	Peltigerales	NO, Troms, 2005, A. Granmo	TROM_L_50934	OLICH3536-17	MK811932	
Lobaria scrobiculata	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196350	OLICH1909-15	MK812570	
Lobaria scrobiculata	Peltigerales	NO, Østfold, 2013, B.P. Løfall & O. Wergeland Krog	O-L-187365	OLICH2341-15	MK812073	
Lobaria scrobiculata	Peltigerales	NO, Hedmark, 2013, R. Haugan	O-L-190098	OLICH2342-15	MK812310	

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Lobaria scrobiculata	Peltigerales	NO, Buskerud, 2012, T.H. Hofton	O-L-194516	OLICH2343-15	MK812214	
Lobaria scrobiculata	Peltigerales	NO, Rogaland, 2012, J.T. Klepsland	O-L-186129	OLICH2344-15	MK811651	
Lobaria scrobiculata	Peltigerales	NO, Nord-Trøndelag, 2010, H. Bratli	O-L-168086	OLICH2345-15	MK812309	
Lobaria scrobiculata	Peltigerales	NO, Troms, 2005, A. Granmo	TROM_L_50935	OLICH3537-17	MK812074	
Lobaria scrobiculata	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196051	OLICH3810-17	MK811855	
Lobaria virens	Peltigerales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201271	OLICH2774-16	MK811660	
Lobaria virens	Peltigerales	NO, Nordland, 2014, J.T. Klepsland	O-L-200346	OLICH3249-16	MK811736	
Lobaria virens	Peltigerales	NO, Vestfold, 2003, T.H. Hofton et al.	O-L-128546	OLICH4103-17	MK812046	
Lobothallia alphoplaca	Pertusariales	NO, Finnmark, 2014, J.T. Klepsland	O-L-200411	OLICH2658-16	MK812484	
Lobothallia melanaspis	Pertusariales	SE, Torne Lappmark, 2014, E. Timdal	O-L-195680	OLICH2007-15	MK811796	
Lobothallia melanaspis	Pertusariales	NO, Hedmark, 2014, R. Haugan	O-L-198879	OLICH2390-16	MK811944	

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Loxospora elatina	Sarrameanales	NO, Nord-Trøndelag, 2014, J.T. Klepsland	O-L-200270	OLICH2657-16	MK812411	
Massalongia carnosa	Peltigerales	NO, Aust-Agder, 2013, J.T. Klepsland	O-L-198320	OLICH2371-15	MK812187	
Massalongia carnosa	Peltigerales	NO, Buskerud, 2011, E. Timdal	O-L-175425	OLICH3285-16	MK811716	
Megalaria grossa	Lecanorales	NO, Akershus, 2010, J.T. Klepsland	O-L-174947	OLICH1036-13	MK811839	
Megalaria grossa	Lecanorales	NO, Sør-Trøndelag, 2005, E. Timdal	O-L-149362	OLICH1039-13	MK812151	
Megalaria grossa	Lecanorales	NO, Nordland, 2014, J.T. Klepsland	O-L-200308	OLICH2656-16	MK812492	
Megalaria pulverea	Lecanorales	NO, Sogn og Fjordane, 2009, J.T. Klepsland	O-L-165033	OLICH1033-13	MK812535	
Megalaria pulverea	Lecanorales	NO, Sør-Trøndelag, 2009, R. Haugan	O-L-167026	OLICH1034-13	MK812297	
Megalaria pulverea	Lecanorales	NO, Nord-Trøndelag, 2008, J.T. Klepsland	O-L-158214	OLICH1035-13	MK812205	
Megalaria pulverea	Lecanorales	NO, Hordaland, 2011, J.T. Klepsland	O-L-176983	OLICH1317-14	MK812565	

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Megalaria pulverea	Lecanorales	NO, Nordland, 2013, J.T. Klepsland	O-L-197986	OLICH2104-15	MK812321	
Melanelia agnata	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196376	OLICH1935-15	MK812394	
Melanelia hepatizon	Lecanorales	NO, Hordaland, 2014, E. Timdal	O-L-195807	OLICH1679-14	MK812512	
Melanelia hepatizon	Lecanorales	NO, Finnmark, 2014, M. Westberg	O-L-195864	OLICH1709-14	KY266879	
Melanelia hepatizon	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201254	OLICH2762-16	MK812070	
Melanelia hepatizon	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184723	OLICH939-13	MK812188	
Melanelia stygia	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184736	OLICH1418-14	MK812608	
Melanelia stygia	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196377	OLICH1936-15	MK812312	
Melanelixia fuliginosa	Lecanorales	NO, Vestfold, 2015, E. Timdal	O-L-198943	OLICH2499-16	MK812485	
Melanelixia fuliginosa	Lecanorales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200866	OLICH2518-16	MK812619	

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Melanelixia fuliginosa	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196050	OLICH3818-17	MK812455	
Melanelixia glabratula	Lecanorales	NO, Hordaland, 2011, J.T. Klepsland	O-L-176965	OLICH4122-17	MK812674	
Melanelixia subargentifera	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-200810	OLICH2475-16	MK812517	
Melanelixia subargentifera	Lecanorales	NO, Hedmark, 2015, E. Timdal	O-L-200854	OLICH2505-16	MK812491	
Melanelixia subargentifera	Lecanorales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200867	OLICH2519-16	MK811964	
Melanelixia subargentifera	Lecanorales	NO, Hedmark, 2014, R. Haugan	O-L-207985	OLICH3820-17	MK812324	
Melanelixia subaurifera	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195997	OLICH1842-14	MK811631	
Melanelixia subaurifera	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-199993	OLICH1967-15	MK811942	
Melanelixia subaurifera	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-198930	OLICH2483-16	MK812688	
Melanohalea exasperata	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196008	OLICH1853-14	MK812395	

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Melanohalea exasperata	Lecanorales	NO, Telemark, 2015, E. Timdal	O-L-208004	OLICH3878-17	MK812307	
Melanohalea exasperata	Lecanorales	NO, Sogn og Fjordane, 2004, A. Breili	O-L-151072	OLICH4123-17	MK812184	
Melanohalea infumata	Lecanorales	NO, Troms, 2003, E. Timdal	O-L-123135	OLICH4126-17	MK812651	
Melanohalea olivacea	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195933	OLICH1778-14	KY266962	
Melanohalea olivacea	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195826	OLICH2198-15	MK812054	
Melanohalea olivacea	Lecanorales	NO, Telemark, 2015, E. Timdal	O-L-208005	OLICH3879-17	MK812340	
Melanohalea septentrionalis	Lecanorales	NO, Akershus, 2017, S. Rui & E. Timdal	O-L-206865	OLICH4110-17	MK812433	
Menegazzia subsimilis	Lecanorales	NO, Rogaland, 2007, E. Timdal	O-L-149092	OLICH864-13	MK812421	
Menegazzia subsimilis	Lecanorales	NO, Rogaland, 2012, J.T. Klepsland	O-L-186134	OLICH944-13	MK812020	
Menegazzia terebrata	Lecanorales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200861	OLICH2513-16	MK812093	
Menegazzia terebrata	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200924	OLICH2532-16	MK812635	

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Menegazzia terebrata	Lecanorales	NO, Hordaland, 2013, T. Tønsberg	BG-L-95692	OLICH858-13	MK812654	
Menegazzia terebrata	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-176828	OLICH861-13	MK812025	
Menegazzia terebrata	Lecanorales	NO, Rogaland, 2012, J.T. Klepsland	O-L-186132	OLICH949-13	MK812145	
Micarea botryoides	Lecanorales	NO, Rogaland, 2013, J.I. Johnsen	BG-L-95780	OLICH1006-13	MK812289	
Micarea denigrata	Lecanorales	NO, Oppland, 2011, R. Haugan & A.M. Haugan	O-L-174438	OLICH1013-13	MK811696	
Micarea misella	Lecanorales	NO, Nord-Trøndelag, 2013, H. Holien	TRH-L-15146	OLICH990-13	MK812399	
Micarea paratropa	Lecanorales	NO, Sør-Trøndelag, 2010, R. Haugan	O-L-165711	OLICH101-11	MK812318	no lichen substances
Montanelia disjuncta	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195590	OLICH1531-14	MK811852	
Montanelia disjuncta	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196357	OLICH1916-15	MK811711	
Montanelia disjuncta	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-198675	OLICH2404-16	KY266910	
Montanelia panniformis	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195904	OLICH1749-14	KY266847	

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Montanelia panniformis	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200016	OLICH1990-15	MK812407	
Montanelia panniformis	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200878	OLICH2535-16	MK812634	
Montanelia panniformis	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201338	OLICH2722-16	MK812263	
Montanelia sorediata	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-195791	OLICH1663-14	MK811963	
Montanelia sorediata	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195658	OLICH1998-15	MK811965	
Montanelia sorediata	Lecanorales	NO, Buskerud, 2016, M. Stapnes Dahl et al.	O-L-204941	OLICH4115-17	MK811977	
Montanelia tominii	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201344	OLICH2728-16	MK812373	
Mycobilimbia berengeriana	Lecideales	NO, Aust-Agder, 2011, J.T. Klepsland	O-L-177070	OLICH1113-14	MK812040	
Mycobilimbia berengeriana	Lecideales	NO, Oppland, 2011, J.T. Klepsland	O-L-176838	OLICH1114-14	MK812343	
Mycobilimbia berengeriana	Lecideales	NO, Finnmark, 2011, E. Timdal	O-L-170554	OLICH1117-14	MK811751	no lichen substances
Mycobilimbia berengeriana	Lecideales	NO, Aust-Agder, 2009, J.T. Klepsland	O-L-167344	OLICH1170-14	MK811880	
Mycobilimbia berengeriana	Lecideales	NO, Finnmark, 2014, E. Llop Vallverdu	O-L-195696	OLICH1568-14	KY266871	

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Mycobilimbia berengeriana	Lecideales	NO, Sør-Trøndelag, 2004, R. Haugan	O-L-142068	OLICH629-13	MK811889	
Mycobilimbia carneoalbida	Lecideales	NO, Telemark, 2010, J.T. Klepsland	O-L-175294	OLICH1109-14	MK812353	
Mycobilimbia carneoalbida	Lecideales	NO, Aust-Agder, 2005, J.T. Klepsland	O-L-151121	OLICH1120-14	MK811646	
Mycobilimbia carneoalbida	Lecideales	NO, Troms, 2009, J.T. Klepsland	O-L-164904	OLICH1121-14	MK812149	
Mycobilimbia carneoalbida	Lecideales	NO, Oppland, 2011, R. Haugan	O-L-174298	OLICH1122-14	MK812290	
Mycobilimbia carneoalbida	Lecideales	NO, Hedmark, 2011, R. Haugan	O-L-174282	OLICH1123-14	MK812691	
Mycobilimbia carneoalbida	Lecideales	NO, Telemark, 2007, E. Timdal	O-L-149057	OLICH1124-14	MK812639	
Mycobilimbia epixanthoides	Lecideales	NO, Hedmark, 2006, J.T. Klepsland	O-L-164598	OLICH1105-14	MK812105	
Mycobilimbia epixanthoides	Lecideales	NO, Aust-Agder, 2006, J.T. Klepsland	O-L-151124	OLICH1106-14	MK812388	
Mycobilimbia epixanthoides	Lecideales	NO, Troms, 2007, J.T. Klepsland	O-L-154903	OLICH1107-14	MK812645	
Mycobilimbia epixanthoides	Lecideales	NO, Telemark, 2007, E. Timdal	O-L-149055	OLICH1108-14	MK812402	no lichen substances
Mycobilimbia epixanthoides	Lecideales	NO, Akershus, 2000, R. Haugan	O-L-160303	OLICH1112-14	MK811772	

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Mycobilimbia pilularis	Lecideales	NO, Vest-Agder, 2009, J.T. Klepsland	O-L-164694	OLICH1110-14	MK812275	
Mycobilimbia pilularis	Lecideales	NO, Møre og Romsdal, 2012, B. Nordén & J.B. Jordal	O-L-180158	OLICH1111-14	MK812666	
Mycobilimbia pilularis	Lecideales	NO, Hordaland, 2008, J.B. Jordal	O-L-176020	OLICH1125-14	MK812525	
Mycobilimbia pilularis	Lecideales	NO, Sogn og Fjordane, 2009, A. Breili	O-L-159489	OLICH1126-14	MK812665	
Mycobilimbia tetramera	Lecideales	NO, Finnmark, 2011, E. Timdal	O-L-170621	OLICH1119-14	MK812422	no lichen substances
Mycobilimbia tetramera	Lecideales	NO, Nordland, 2011, R. Haugan	O-L-174132	OLICH1127-14	MK812216	no lichen substances
Mycobilimbia tetramera	Lecideales	NO, Aust-Agder, 2006, J.T. Klepsland	O-L-183493	OLICH1128-14	MK811935	
Mycobilimbia tetramera	Lecideales	NO, Finnmark, 2014, E. Llop Vallverdu	O-L-195846	OLICH1691-14	MK812124	
Mycobilimbia tetramera	Lecideales	NO, Akershus, 2014, J.T. Klepsland	O-L-200258	OLICH3147-16	MK812192	
Mycobilimbia tetramera	Lecideales	NO, Akershus, 2009, J.T. Klepsland	O-L-164634	OLICH631-13	MK812158	
Mycobilimbia tetramera	Lecideales	NO, Hedmark, 2008, R. Haugan	O-L-160476	OLICH633-13	MK812208	

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Mycoblastus sanguinarius	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195768	OLICH1640-14	MK812482	
Mycoblastus sanguinarius	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201263	OLICH2769-16	MK811859	
Mycoblastus sanguinarius	Lecanorales	NO, Hedmark, 2010, E. Timdal	O-L-163524	OLICH391-13	MK811665	
Mycoblastus sanguinarius	Lecanorales	NO, Telemark, 2005, E. Timdal	O-L-138597	OLICH410-13	MK812197	
Mycoblastus sanguinarius	Lecanorales	NO, Oppland, 2006, A. Breili	O-L-150999	OLICH617-13	MK812135	
Myriolecis straminea	Lecanorales	NO, Finnmark, 2014, M. Westberg	O-L-195870	OLICH1715-14	KY266929	
Myriospora smaragdula	Acarosporales	NO, Finnmark, 2014, E. Timdal	O-L-195609	OLICH1543-14	MK811918	
Nephroma arcticum	Peltigerales	NO, Troms, 2014, E. Timdal	O-L-195654	OLICH1566-14	MK811882	
Nephroma arcticum	Peltigerales	NO, Finnmark, 2014, S. Rui	O-L-195724	OLICH1596-14	KY266888	
Nephroma arcticum	Peltigerales	NO, Finnmark, 2014, A. Millanes	O-L-195873	OLICH1718-14	KY266963	
Nephroma arcticum	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196368	OLICH1927-15	MK812091	
Nephroma arcticum	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-196272	OLICH1945-15	MK812336	

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Nephroma arcticum	Peltigerales	NO, Nord-Trøndelag, 2014, Z. Fackovcova et al.	SAV-36	OLICH3073-16	MK812204	
Nephroma arcticum	Peltigerales	NO, Nord-Trøndelag, 2014, Z. Fackovcova et al.	SAV-37	OLICH3074-16	MK812592	
Nephroma arcticum	Peltigerales	NO, Finnmark, 2008, A. Granmo & G. Mathiassen	TROM_L_46162	OLICH3570-17	MK811792	
Nephroma arcticum	Peltigerales	NO, Hedmark, 2014, R. Haugan	O-L-207992	OLICH3828-17	MK812028	
Nephroma bellum	Peltigerales	NO, Nord-Trøndelag, 2010, H. Bratli	O-L-168043	OLICH2027-15	MK811672	triterpenoids
Nephroma bellum	Peltigerales	NO, Sogn og Fjordane, 2012, O. Roen	O-L-181644	OLICH2028-15	MK812308	triterpenoids
Nephroma bellum	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196348	OLICH2373-15	MK812483	triterpenoids
Nephroma expallidum	Peltigerales	NO, Finnmark, 2014, M. Westberg	O-L-195701	OLICH1573-14	KY266905	
Nephroma expallidum	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195891	OLICH1736-14	KY266844	
Nephroma expallidum	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196346	OLICH1906-15	MK812408	

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Nephroma expallidum	Peltigerales	NO, Finnmark, 2011, E. Timdal	O-L-170548	OLICH2365-15	MK811945	
Nephroma expallidum	Peltigerales	NO, Svalbard, 2015, S. Rui	O-L-203292	OLICH2712-16	MK812041	
Nephroma helveticum	Peltigerales	NO, Buskerud, 2013, T.H. Hofton	O-L-196491	OLICH2036-15	KT800007	triterpenoids
Nephroma helveticum	Peltigerales	NO, Oppland, 2011, J.T. Klepsland	O-L-181601	OLICH2037-15	KT800006	triterpenoides (T4, T1)
Nephroma laevigatum	Peltigerales	NO, Nord-Trøndelag, 2010, H. Bratli	O-L-168088	OLICH2025-15	MK812687	
Nephroma laevigatum	Peltigerales	NO, Sogn og Fjordane, 2010, J.T. Klepsland	O-L-175024	OLICH2038-15	MK812108	pigments, triterpenoid
Nephroma laevigatum	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201288	OLICH2676-16	MK812261	
Nephroma laevigatum	Peltigerales	NO, Troms, 2010, K. Wannebo Nilsen	TROM_L_48759	OLICH3531-17	MK811868	
Nephroma laevigatum	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196055	OLICH3812-17	MK811969	
Nephroma laevigatum	Peltigerales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-204997	OLICH4002-17	MK812002	
Nephroma parile	Peltigerales	NO, Finnmark, 2014, T. Tønsberg	O-L-195875	OLICH1720-14	KY266927	triterpenoids

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Nephroma resupinatum	Peltigerales	NO, Hedmark, 2013, R. Haugan	O-L-190528	OLICH2020-15	MK811650	
Nephroma resupinatum	Peltigerales	NO, Sogn og Fjordane, 2010, E. Timdal	O-L-163401	OLICH2022-15	MK812367	
Nephroma resupinatum	Peltigerales	NO, Troms, 2011, J.T. Klepsland	O-L-177168	OLICH2023-15	MK812612	
Nephroma resupinatum	Peltigerales	NO, Nord-Trøndelag, 2011, J.T. Klepsland	O-L-183598	OLICH2024-15	MK811912	no lichen substances
Nephroma resupinatum	Peltigerales	NO, Troms, 2005, A. Granmo	TROM_L_50937	OLICH3538-17	MK812301	
Nephroma resupinatum	Peltigerales	NO, Finnmark, 2008, A. Granmo & G. Mathiassen	TROM_L_48235	OLICH3588-17	MK812553	
Nephroma tangeriense	Peltigerales	NO, Hordaland, 2012, J.T. Klepsland	O-L-186150	OLICH2018-15	MK811986	pigments, triterpenoides (T3, T4, T6)
Nephroma tangeriense	Peltigerales	NO, Rogaland, 2010, J.T. Klepsland	O-L-181602	OLICH2019-15	MK812084	pigments, triterpenoides (T2, T3, T6)
Nephroma tangeriense	Peltigerales	NO, Vest-Agder, 2011, J.T. Klepsland	O-L-183599	OLICH2039-15	MK812530	pigments, triterpenoids
Nephroma tangeriense	Peltigerales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197824	OLICH2105-15	MK812579	pigments
Nephroma tangeriense	Peltigerales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197826	OLICH2106-15	MK812593	

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Nevesia sampaiana	Peltigerales	NO, Sogn og Fjordane, 2009, H. Fjeldstad	O-L-203003	OLICH3277-16	MK812089	
Normandina pulchella	Verrucariales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-204993	OLICH4003-17	MK812131	
Ochrolechia alaskana	Pertusariales	NO, Finnmark, 2008, A. Granmo & G. Mathiassen	TROM_L_60552	OLICH3582-17	MK811874	
Ochrolechia alboflavescens	Pertusariales	NO, Nord-Trøndelag, 2015, F. Jonsson	O-L-201276	OLICH3230-16	MK812244	
Ochrolechia androgyna	Pertusariales	NO, Nord-Trøndelag, 2015, H. Holien	TRH-L-16947	OLICH3684-17	MK812264	
Ochrolechia androgyna	Pertusariales	NO, Oppland, 2015, R. Haugan	O-L-203919	OLICH3885-17	MK811897	atranorin, gyrophoric acid, lecanoric acid, unknown acid
Ochrolechia androgyna	Pertusariales	NO, Oppland, 2015, E. Timdal	O-L-201397	OLICH4178-17	MK812682	gyrophoric acid
Ochrolechia frigida	Pertusariales	NO, Finnmark, 2014, A. Launis	O-L-195945	OLICH1790-14	KY266952	
Ochrolechia gowardii	Pertusariales	NO, Nord-Trøndelag, 2014, J.T. Klepsland	O-L-200283	OLICH3146-16	MK812101	
Ochrolechia gowardii	Pertusariales	NO, Nord-Trøndelag, 2012, J.T. Klepsland	O-L-200100	OLICH3225-16	MK812175	

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Ochrolechia mahluensis	Pertusariales	NO, Finnmark, 2014, H. Holien	O-L-195912	OLICH1757-14	KY266861	
Ochrolechia microstictoides	Pertusariales	NO, Aust-Agder, 2014, J.T. Klepsland	O-L-200753	OLICH3145-16	MK812077	
Ochrolechia parella	Pertusariales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196015	OLICH1860-14	MK811779	
Ochrolechia parella	Pertusariales	NO, Nordland, 2014, J.T. Klepsland	O-L-200300	OLICH3144-16	MK811835	
Ochrolechia subviridis	Pertusariales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200638	OLICH2655-16	MK812495	gyrophoric acid
Ochrolechia szatalaensis	Pertusariales	NO, Troms, 2011, J.T. Klepsland	O-L-200097	OLICH2653-16	MK811817	murolic acid (complex), variolaric acid
Ochrolechia szatalaensis	Pertusariales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199529	OLICH2654-16	MK812256	
Ochrolechia szatalaensis	Pertusariales	NO, Nord-Trøndelag, 2014, J.T. Klepsland	O-L-200284	OLICH3143-16	MK811903	
Ochrolechia szatalaensis	Pertusariales	NO, Finnmark, 2011, J.T. Klepsland	O-L-200096	OLICH3227-16	MK811865	murolic acid (complex), variolaric acid
Ochrolechia tartarea	Pertusariales	NO, Finnmark, 2014, H. Holien	O-L-195951	OLICH1796-14	KY266863	
Ochrolechia tartarea	Pertusariales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196041	OLICH3795-17	MK812341	

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Ochrolechia upsaliensis	Pertusariales	NO, Finnmark, 2014, H. Holien	O-L-195967	OLICH1812-14	KY266960	
Ochrolechia upsaliensis	Pertusariales	NO, Oppland, 2013, J.T. Klepsland	O-L-198354	OLICH2376-16	MK811642	
Opegrapha vermicellifera	Arthoniales	NO, Hordaland, 2016, J.T. Klepsland	O-L-206757	OLICH3476-17	MK811737	
Ophioparma lapponica	Umbilicariales	NO, Finnmark, 2014, T.B. Wheeler	O-L-195838	OLICH1683-14	KY266901	
Ophioparma ventosa	Umbilicariales	FI, Inarin Lappi, 2014, E. Timdal	O-L-195498	OLICH1503-14	MK812137	
Ophioparma ventosa	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195543	OLICH1512-14	KY266864	
Ophioparma ventosa	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195574	OLICH1525-14	MK812332	
Ophioparma ventosa	Umbilicariales	NO, Oppland, 2015, E. Timdal	O-L-201417	OLICH3307-16	MK811904	
Ophioparma ventosa	Umbilicariales	NO, Troms, 2000, K. Lerfall	TROM_L _565529	OLICH3550-17	MK811740	
Ophioparma ventosa	Umbilicariales	NO, Hedmark, 2013, E. Timdal	O-L-184520	OLICH701-13	MK811771	
Orphniospora moriopsis	Umbilicariales	NO, Finnmark, 2014, H. Holien	O-L-195716	OLICH1588-14	KY266869	
Pannaria conoplea	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196369	OLICH1928-15	MK811685	

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Pannaria conoplea	Peltigerales	NO, Sogn og Fjordane, 2012, T.H. Hofton & T. Høitomt	O-L-194474	OLICH2379-16	MK812100	
Pannaria conoplea	Peltigerales	NO, Hedmark, 2011, R. Haugan	O-L-173219	OLICH2380-16	MK812203	
Pannaria conoplea	Peltigerales	NO, Hedmark, 2011, R. Haugan	O-L-173231	OLICH2382-16	MK812521	
Pannaria conoplea	Peltigerales	NO, Hedmark, 2011, R. Haugan	O-L-173220	OLICH2383-16	MK811788	
Pannaria conoplea	Peltigerales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200927	OLICH2553-16	MK812604	
Pannaria conoplea	Peltigerales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201274	OLICH2776-16	MK812480	
Pannaria hookeri	Peltigerales	NO, Nordland, 2013, J.T. Klepsland	O-L-198018	OLICH3882-17	MK812291	
Pannaria rubiginosa	Peltigerales	NO, Nordland, 2004, A. Elvebakk	TROM_L_1340509	OLICH3563-17	MK812061	
Pannaria rubiginosa	Peltigerales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201270	OLICH3846-17	MK812317	
Parmelia ernstiae	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201279	OLICH2777-16	MK567160	atranorin, lichesterinic acid, lobaric acid, protolichesterinic acid, salazinic acid

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Parmelia ernstiae	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201277	OLICH3848-17	MK567162	atranorin, lichesterinic acid, lobaric acid, protolichesterinic acid, salazinic acid
Parmelia fraudans	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196374	OLICH1933-15	MK812511	
Parmelia omphalodes	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195947	OLICH1792-14	KY266894	
Parmelia saxatilis	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195994	OLICH1839-14	MK567163	atranorin, lobaric acid, salazinic acid
Parmelia saxatilis	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184724	OLICH940-13	MK567164	atranorin, lobaric acid, salazinic acid
Parmelia serrana	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195995	OLICH1840-14	MK567161	atranorin, lichesterinic acid, lobaric acid, protolichesterinic acid, salazinic acid
Parmelia serrana	Lecanorales	NO, Vestfold, 2016, S. Rui & E. Timdal	O-L-205007	OLICH4004-17	MK567159	atranorin, lichesterinic acid, lobaric acid, protolichesterinic acid, salazinic acid
Parmelia sulcata	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-195789	OLICH1661-14	MK811938	
Parmelia sulcata	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196000	OLICH1845-14	MK812088	

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Parmelia sulcata	Lecanorales	NO, Oslo, 2014, M. Bendiksby et al.	O-L-196057	OLICH1873-14	MK812065	
Parmelia sulcata	Lecanorales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-196331	OLICH2261-15	MK812499	
Parmelia sulcata	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184694	OLICH878-13	MK812475	
Parmeliella parvula	Peltigerales	NO, Nord-Trøndelag, 2013, J.T. Klepsland	O-L-197955	OLICH2107-15	MK812304	
Parmeliella triptophylla	Peltigerales	NO, Telemark, 2015, E. Timdal	O-L-207999	OLICH3873-17	MK812457	
Parmelina pastillifera	Lecanorales	NO, Rogaland, 2013, J.T. Klepsland	O-L-198298	OLICH2377-16	MK812633	
Parmelina pastillifera	Lecanorales	NO, Hordaland, 2006, H. Fjeldstad & G. Gaarder	O-L-202999	OLICH3231-16	MK812400	
Parmelina pastillifera	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-205003	OLICH4005-17	MK812564	
Parmelina pastillifera	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-204989	OLICH4006-17	MK812554	
Parmelina pastillifera	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-205000	OLICH4007-17	MK812365	
Parmelina tiliacea	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-199984	OLICH1958-15	MK812323	

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Parmelina tiliacea	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196287	OLICH2217-15	MK812693	
Parmelina tiliacea	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-198924	OLICH2477-16	MK811628	
Parmelina tiliacea	Lecanorales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200873	OLICH2525-16	MK812259	
Parmelina tiliacea	Lecanorales	NO, Akershus, 2015, S. Rui & E. Timdal	O-L-200818	OLICH2589-16	MK812562	
Parmelina tiliacea	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201334	OLICH2718-16	MK811862	
Parmelina tiliacea	Lecanorales	NO, Oslo, 2016, S. Rui & E. Timdal	O-L-203344	OLICH3314-16	MK812472	
Parmelina tiliacea	Lecanorales	NO, Rogaland, 2015, T. Tønsberg & E. Nygaard	BG-L-98117	OLICH3696-17	MK812477	
Parmeliopsis ambigua	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195902	OLICH1747-14	KY266965	
Parmeliopsis ambigua	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195934	OLICH1779-14	KY266851	
Parmeliopsis ambigua	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195990	OLICH1835-14	KY266850	
Parmeliopsis ambigua	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184695	OLICH879-13	MK811727	

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Parmeliopsis hyperopta	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195989	OLICH1834-14	KY266853	
Parmeliopsis hyperopta	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184696	OLICH880-13	MK812515	
Parmotrema crinitum	Lecanorales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197835	OLICH2109-15	MK812284	
Parmotrema crinitum	Lecanorales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197840	OLICH2110-15	MK811794	
Parmotrema perlatum	Lecanorales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200600	OLICH2651-16	MK812450	
Parmotrema perlatum	Lecanorales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200643	OLICH4358-17	MK812630	
Pectenia cyanoloma	Peltigerales	NO, Nord-Trøndelag, 2013, H. Holien	O-L-193006	OLICH1477-14	MK811927	
Pectenia cyanoloma	Peltigerales	NO, Sogn og Fjordane, 2017, O. Olsen	O-L-207808	OLICH4320-17	MK812029	
Peltigera aphthosa	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195726	OLICH1598-14	KY266857	
Peltigera aphthosa	Peltigerales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200017	OLICH1991-15	MK811726	
Peltigera aphthosa	Peltigerales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184749	OLICH2048-15	MK812596	
Peltigera aphthosa	Peltigerales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200534	OLICH2611-16	MK811760	

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Peltigera aphthosa	Peltigerales	NO, Telemark, 2015, E. Timdal	O-L-208000	OLICH3874-17	MK811699	
Peltigera aphthosa	Peltigerales	NO, Buskerud, 2016, M. Bendiksby & E. Timdal	O-L-208028	OLICH4256-17	MK811816	
Peltigera britannica	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201329	OLICH2689-16	MK812626	
Peltigera canina	Peltigerales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200554	OLICH2610-16	MK811916	
Peltigera canina	Peltigerales	NO, Østfold, 2012, K.A. Lye	O-L-206918	OLICH4134-17	MK812107	
Peltigera canina	Peltigerales	NO, Østfold, 2012, K.A. Lye	O-L-206873	OLICH4135-17	MK811752	
Peltigera collina	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196371	OLICH1930-15	MK812439	
Peltigera collina	Peltigerales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200865	OLICH2517-16	MK811975	
Peltigera collina	Peltigerales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200926	OLICH2540-16	MK812019	
Peltigera collina	Peltigerales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201268	OLICH3845-17	MK811743	
Peltigera degenii	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-196276	OLICH1950-15	MK812238	

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Peltigera degenii	Peltigerales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-196335	OLICH2273-15	MK812333	
Peltigera degenii	Peltigerales	NO, Buskerud, 2016, S. Rui & E. Timdal	O-L-208031	OLICH4259-17	MK812618	
Peltigera didactyla	Peltigerales	NO, Telemark, 2015, E. Timdal	O-L-208003	OLICH3877-17	MK811844	
Peltigera elisabethae	Peltigerales	NO, Buskerud, 2014, E. Timdal	O-L-196071	OLICH1887-14	MK811869	
Peltigera extenuata	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196343	OLICH1903-15	MK811873	
Peltigera extenuata	Peltigerales	NO, Oslo, 2014, E. Timdal	O-L-200007	OLICH1981-15	MK811908	
Peltigera extenuata	Peltigerales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200018	OLICH1992-15	MK811654	
Peltigera horizontalis	Peltigerales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184750	OLICH2083-15	MK811925	
Peltigera horizontalis	Peltigerales	NO, Hedmark, 2014, R. Haugan	O-L-198894	OLICH2391-16	MK812678	
Peltigera horizontalis	Peltigerales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200862	OLICH2514-16	MK811673	
Peltigera horizontalis	Peltigerales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208021	OLICH4193-17	MK812656	

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Peltigera hymenina	Peltigerales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200019	OLICH1993-15	MK812274	
Peltigera hymenina	Peltigerales	NO, Oslo, 2014, E. Timdal	O-L-198933	OLICH2485-16	MK811966	
Peltigera hymenina	Peltigerales	NO, Vestfold, 2015, E. Timdal	O-L-198944	OLICH2495-16	MK812144	
Peltigera hymenina	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201328	OLICH2688-16	MK811735	
Peltigera lepidophora	Peltigerales	NO, Telemark, 2015, E. Timdal & S. Rui	O-L-200874	OLICH3835-17	MK812313	
Peltigera lepidophora	Peltigerales	NO, Sør-Trøndelag, 2013, E. Timdal	O-L-184530	OLICH732-13	MK812625	
Peltigera leucophlebia	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196342	OLICH1902-15	MK812292	
Peltigera leucophlebia	Peltigerales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200020	OLICH1994-15	MK811981	
Peltigera leucophlebia	Peltigerales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200929	OLICH2555-16	MK811680	
Peltigera leucophlebia	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201315	OLICH2684-16	MK812123	
Peltigera leucophlebia	Peltigerales	NO, Svalbard, 2015, S. Rui	O-L-203280	OLICH2699-16	MK811857	

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Peltigera leucophlebia	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196030	OLICH3807-17	MK812241	
Peltigera leucophlebia	Peltigerales	NO, Oppland, 2015, E. Timdal	O-L-201400	OLICH4181-17	MK812102	
Peltigera malacea	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195725	OLICH1597-14	KY266940	
Peltigera malacea	Peltigerales	NO, Finnmark, 2014, R. Haugan	O-L-195848	OLICH1693-14	KY266836	
Peltigera malacea	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196362	OLICH1921-15	MK811739	
Peltigera malacea	Peltigerales	NO, Oslo, 2014, E. Timdal	O-L-200006	OLICH1980-15	MK812014	
Peltigera malacea	Peltigerales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184751	OLICH2085-15	MK811998	
Peltigera malacea	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201331	OLICH2690-16	MK811990	
Peltigera membranacea	Peltigerales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195991	OLICH1836-14	MK811987	
Peltigera membranacea	Peltigerales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200024	OLICH2472-16	MK812374	
Peltigera neckeri	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195753	OLICH1625-14	KY266937	

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Peltigera neckeri	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195932	OLICH1777-14	MK811778	
Peltigera neckeri	Peltigerales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200910	OLICH2582-16	MK811968	
Peltigera neocanina	Peltigerales	NO, Buskerud, 2014, R. Haugan & E. Timdal	O-L-196062	OLICH1878-14	MK812413	
Peltigera neopolydactyla	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-196266	OLICH1941-15	MK812243	
Peltigera neopolydactyla	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-196277	OLICH1946-15	MK812022	
Peltigera neopolydactyla	Peltigerales	NO, Oslo, 2014, E. Timdal	O-L-199994	OLICH1968-15	MK812548	
Peltigera neopolydactyla	Peltigerales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184753	OLICH2084-15	MK811653	
Peltigera neopolydactyla	Peltigerales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200025	OLICH2473-16	MK812286	
Peltigera neopolydactyla	Peltigerales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201332	OLICH2691-16	MK812172	
Peltigera polydactylon	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-196264	OLICH1939-15	MK811815	
Peltigera polydactylon	Peltigerales	NO, Telemark, 2014, E. Timdal	O-L-195820	OLICH2192-15	MK812112	
Peltigera polydactylon	Peltigerales	NO, Buskerud, 2016, S. Rui & E. Timdal	O-L-206899	OLICH4136-17	MK812583	

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Peltigera praetextata	Peltigerales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184752	OLICH2044-15	MK811692	
Peltigera praetextata	Peltigerales	NO, Oslo, 2014, E. Timdal	O-L-195837	OLICH2209-15	MK811856	
Peltigera praetextata	Peltigerales	NO, Akershus, 2009, T. Starholm	O-L-201769	OLICH3880-17	MK812051	
Peltigera praetextata	Peltigerales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208022	OLICH4194-17	MK812578	
Peltigera retifoveata	Peltigerales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200533	OLICH2605-16	MK811996	
Peltigera rufescens	Peltigerales	NO, Oslo, 2014, S. Rui & E. Timdal	O-L-196072	OLICH1888-14	MK812663	
Peltigera rufescens	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196341	OLICH1901-15	MK811858	
Peltigera rufescens	Peltigerales	NO, Akershus, 2014, E. Timdal	O-L-199989	OLICH1963-15	MK812224	
Peltigera rufescens	Peltigerales	NO, Oppland, 2015, E. Timdal	O-L-201347	OLICH2733-16	MK812696	
Peltigera scabrosa	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195729	OLICH1601-14	KY266948	
Peltigera scabrosa	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195765	OLICH1637-14	KY266970	
Peltigera scabrosa	Peltigerales	NO, Telemark, 2015, E. Timdal	O-L-207997	OLICH3871-17	MK812044	

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Peltigera scabrosella	Peltigerales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201255	OLICH2763-16	MK812406	
Peltigera scabrosella	Peltigerales	NO, Telemark, 2015, E. Timdal	O-L-207998	OLICH3872-17	MK812463	
Peltula euploca	Lichinales	NO, Oppland, 2013, J.T. Klepsland	O-L-197859	OLICH2111-15	MK811928	
Pertusaria alpina	Pertusariales	NO, Nordland, 2014, J.T. Klepsland	O-L-200312	OLICH3141-16	MK811905	
Pertusaria alpina	Pertusariales	NO, Nord-Trøndelag, 2013, J.T. Klepsland	O-L-197933	OLICH4038-17	MK811785	
Pertusaria aspergilla	Pertusariales	NO, Sør-Trøndelag, 2015, H. Holien	TRH-L-16775	OLICH3686-17	MK812282	
Pertusaria aspergilla	Pertusariales	NO, Nordland, 2015, T. Tønsberg	BG-L-99158	OLICH3716-17	MK812384	
Pertusaria aspergilla	Pertusariales	NO, Østfold, 2015, R. Haugan	O-L-204101	OLICH3929-17	MK812496	fumarprotocetraric acid
Pertusaria carneopallida	Pertusariales	NO, Nordland, 2013, J.T. Klepsland	O-L-198006	OLICH4039-17	MK812218	
Pertusaria excludens	Pertusariales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-203909	OLICH3927-17	MK811670	norstictic acid

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Pertusaria excludens	Pertusariales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-203523	OLICH3935-17	MK812675	norstictic acid
Pertusaria flavicans	Pertusariales	NO, Møre og Romsdal, 2015, T. Tønsberg	BG-L-99071	OLICH3777-17	MK812409	
Pertusaria flavida	Pertusariales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200860	OLICH2512-16	MK811913	
Pertusaria leioplaca	Pertusariales	NO, Troms, 2000, S. Werth	TROM_L_565683	OLICH3551-17	MK811922	
Pertusaria pertusa	Pertusariales	NO, Vestfold, 2015, E. Timdal	O-L-198948	OLICH2502-16	MK812037	
Phaeophyscia endococcina	Caliciales	NO, Finnmark, 2014, R. Haugan	O-L-198738	OLICH2400-16	MK812217	
Phaeophyscia kairamoi	Caliciales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196355	OLICH1914-15	MK811724	
Phaeophyscia orbicularis	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195734	OLICH1606-14	KY266882	
Phaeophyscia orbicularis	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196004	OLICH1849-14	MK811854	
Phaeophyscia orbicularis	Caliciales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196291	OLICH2221-15	MK811807	
Phaeophyscia orbicularis	Caliciales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-196330	OLICH2259-15	MK812383	

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Phaeophyscia orbicularis	Caliciales	NO, Hedmark, 2014, R. Haugan	O-L-207984	OLICH3819-17	MK812363	
Phaeophyscia sciastra	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195721	OLICH1593-14	KY266837	
Phaeophyscia sciastra	Caliciales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196352	OLICH1911-15	MK812372	
Phlyctis agelaea	Ostropales	NO, Hordaland, 2015, J.T. Klepsland	O-L-206746	OLICH3465-17	MK812009	
Phlyctis argena	Ostropales	NO, Nordland, 2015, T. Tønsberg & A. Botnen	BG-L-98987	OLICH3760-17	MK811759	
Phlyctis argena	Ostropales	NO, Nordland, 2015, T. Tønsberg & A. Botnen	BG-L-99194	OLICH3761-17	MK811753	
Phlyctis argena	Ostropales	NO, Buskerud, 2014, T. Tønsberg	BG-L-99532	OLICH3786-17	MK811872	
Physcia adscendens	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196005	OLICH1850-14	MK811630	
Physcia adscendens	Caliciales	NO, Vestfold, 2015, E. Timdal	O-L-198947	OLICH2501-16	MK812201	
Physcia aipolia	Caliciales	NO, Telemark, 2014, E. Timdal	O-L-195783	OLICH1655-14	MK812601	

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Physcia aipolia	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195992	OLICH1837-14	MK811770	
Physcia aipolia	Caliciales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200890	OLICH2528-16	MK811989	
Physcia aipolia	Caliciales	NO, Oslo, 2014, J.T. Klepsland	O-L-200142	OLICH2609-16	MK812087	
Physcia aipolia	Caliciales	NO, Østfold, 2012, K.A. Lye	O-L-206860	OLICH4138-17	MK811719	
Physcia alnophila	Caliciales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201269	OLICH2773-16	MK812315	
Physcia caesia	Caliciales	NO, Telemark, 2014, E. Timdal	O-L-195792	OLICH1664-14	MK811883	
Physcia caesia	Caliciales	NO, Oslo, 2014, M. Bendiksby et al.	O-L-196078	OLICH1894-14	MK812056	
Physcia caesia	Caliciales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-196333	OLICH2263-15	MK812325	
Physcia caesia	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196035	OLICH3791-17	MK812524	
Physcia dimidiata	Caliciales	NO, Buskerud, 2015, E. Timdal	O-L-201418	OLICH3299-16	MK812556	
Physcia dubia	Caliciales	NO, Oppland, 2013, J.T. Klepsland	O-L-197852	OLICH2113-15	MK812017	

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Physcia dubia	Caliciales	NO, Oppland, 2015, E. Timdal	O-L-201373	OLICH2748-16	MK811700	
Physcia magnussonii	Caliciales	NO, Sogn og Fjordane, 2013, J.T. Klepsland	O-L-197861	OLICH2114-15	MK811875	
Physcia phaea	Caliciales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196373	OLICH1932-15	MK811892	
Physcia stellaris	Caliciales	NO, Troms, 2014, E. Timdal	O-L-195769	OLICH1641-14	MK811861	
Physcia stellaris	Caliciales	NO, Østfold, 2012, K.A. Lye	O-L-206903	OLICH4137-17	MK812381	
Physcia tenella	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195561	OLICH1519-14	KY266867	
Physcia tenella	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196007	OLICH1852-14	MK811920	
Physcia tenella	Caliciales	NO, Oslo, 2014, M. Bendiksby et al.	O-L-196079	OLICH1895-14	MK811798	
Physcia tenella	Caliciales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196294	OLICH2224-15	MK811848	
Physcia tenella	Caliciales	NO, Rogaland, 2013, J.T. Klepsland	O-L-198307	OLICH2357-15	MK811950	
Physcia tenella	Caliciales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196034	OLICH3798-17	MK812588	

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Physconia distorta	Caliciales	NO, Akershus, 2014, E. Timdal	O-L-199983	OLICH1957-15	MK811745	
Physconia distorta	Caliciales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196290	OLICH2220-15	MK812071	
Physconia enteroxantha	Caliciales	NO, Oslo, 2014, R. Haugan et al.	O-L-196058	OLICH1874-14	MK811840	
Physconia enteroxantha	Caliciales	NO, Akershus, 2014, E. Timdal	O-L-199986	OLICH1960-15	MK811812	
Physconia enteroxantha	Caliciales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196293	OLICH2223-15	MK811936	
Physconia enteroxantha	Caliciales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-196328	OLICH2258-15	MK812142	
Physconia muscigena	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195722	OLICH1594-14	KY266849	
Physconia muscigena	Caliciales	NO, Finnmark, 2014, E. Timdal	O-L-195920	OLICH1765-14	KY266925	
Physconia muscigena	Caliciales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196344	OLICH1904-15	MK811781	
Pilophorus dovrensis	Lecanorales	NO, Troms, 2003, E. Timdal	O-L-123083	OLICH211-13	MK812599	
Placynthiella oligotropha	Trapeliales	NO, Oppland, 2012, E. Timdal	O-L-182032	OLICH1176-14	MK811853	
Placynthiella oligotropha	Trapeliales	NO, Oppland, 2011, M. Bendiksby et al.	O-L-175738	OLICH1177-14	MK812378	

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Platismatia glauca	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195649	OLICH1561-14	MK812715	
Platismatia glauca	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195993	OLICH1838-14	MK812351	
Platismatia glauca	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200882	OLICH2564-16	MK812456	
Platismatia glauca	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184697	OLICH881-13	MK812210	
Platismatia norvegica	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201267	OLICH2772-16	MK812616	
Platismatia norvegica	Lecanorales	NO, Akershus, 2017, S. Rui & E. Timdal	O-L-206864	OLICH4109-17	MK812705	
Pleopsidium chlorophanum	Acarosporales	NO, Troms, 2014, E. Timdal	O-L-195643	OLICH1555-14	MK811850	
Pleopsidium chlorophanum	Acarosporales	NO, Finnmark, 2014, E. Timdal	O-L-195940	OLICH1785-14	KY266860	
Pleopsidium chlorophanum	Acarosporales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201252	OLICH2759-16	MK812117	
Pleopsidium chlorophanum	Acarosporales	NO, Sør-Trøndelag, 2017, E. Timdal	O-L-208244	OLICH4322-17	MK812354	

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Pleopsidium chlorophanum	Acarosporales	NO, Telemark, 2013, E. Timdal	O-L-184414	OLICH695-13	MK812213	
Pleopsidium flavum	Acarosporales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200545	OLICH2624-16	MK811960	
Pleopsidium flavum	Acarosporales	NO, Telemark, 2013, E. Timdal	O-L-184415	OLICH696-13	MK812038	
Pleopsidium flavum	Acarosporales	NO, Hordaland, 2013, E. Timdal	O-L-184439	OLICH697-13	MK811877	
Pleurosticta acetabulum	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-199985	OLICH1959-15	MK812572	
Pleurosticta acetabulum	Lecanorales	NO, Vestfold, 2015, E. Timdal	O-L-198935	OLICH2488-16	MK812152	
Pleurosticta acetabulum	Lecanorales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200869	OLICH2521-16	MK811775	
Pleurosticta acetabulum	Lecanorales	NO, Rogaland, 2015, T. Tønsberg & E. Nygaard	BG-L-98170	OLICH3700-17	MK811799	
Pleurosticta acetabulum	Lecanorales	NO, Østfold, 2002, B. P. Løfall	O-L-108808	OLICH4128-17	MK812479	
Polycauliona candelaria	Teloschistales	NO, Akershus, 2014, E. Timdal	O-L-199981	OLICH1955-15	MK811915	
Polycauliona candelaria	Teloschistales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196326	OLICH2256-15	MK812066	

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Polycauliona candelaria	Teloschistales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196340	OLICH2278-15	MK811959	
Polychidium muscicola	Peltigerales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201293	OLICH2795-16	MK812283	
Protoblastenia rupestris	Lecanorales	NO, Finnmark, 2014, A. Millanes	O-L-195859	OLICH1704-14	KY266981	
Protomicarea limosa	Lecanorales	NO, Hedmark, 2012, R. Haugan	O-L-182289	OLICH1084-14	MK811666	
Protomicarea limosa	Lecanorales	NO, Hedmark, 2004, R. Haugan	O-L-131761	OLICH1085-14	MK812532	
Protomicarea limosa	Lecanorales	NO, Nord-Trøndelag, 2009, J.T. Klepsland	O-L-165102	OLICH1086-14	MK812181	
Protomicarea limosa	Lecanorales	NO, Oppland, 2012, E. Timdal	O-L-182031	OLICH1140-14	MK812033	
Protomicarea limosa	Lecanorales	NO, Nordland, 2010, T. Tønsberg	BG-L-92492	OLICH601-13	MK812586	
Protomicarea limosa	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184281	OLICH821-13	MK812176	
Protopannaria pezizoides	Peltigerales	NO, Finnmark, 2014, A. Guillermo	O-L-195697	OLICH1569-14	KY266840	
Protopannaria pezizoides	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195890	OLICH1735-14	KY266909	

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Protopannaria pezizoides	Peltigerales	NO, Finnmark, 2014, H. Holien	O-L-195970	OLICH1815-14	KY266886	
Protopannaria pezizoides	Peltigerales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196347	OLICH1907-15	MK811767	
Protopannaria pezizoides	Peltigerales	NO, Nord-Trøndelag, 2013, J.T. Klepsland	O-L-197950	OLICH2115-15	MK812467	
Protopannaria pezizoides	Peltigerales	NO, Svalbard, 2015, S. Rui	O-L-203297	OLICH2706-16	MK811974	
Protoparmelia badia	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195568	OLICH1522-14	KY266939	
Protoparmelia badia	Lecanorales	NO, Finnmark, 2014, A. Launis	O-L-195839	OLICH1684-14	KY266945	
Pseudephebe minuscula	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196378	OLICH1937-15	MK811997	
Pseudephebe minuscula	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184305	OLICH736-13	MK812067	
Pseudephebe pubescens	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195619	OLICH1548-14	MK812357	
Pseudephebe pubescens	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195849	OLICH1694-14	KY266938	
Pseudephebe pubescens	Lecanorales	NO, Finnmark, 2014, R. Haugan	O-L-195986	OLICH1831-14	KY266914	

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Pseudephebe pubescens	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184396	OLICH694-13	MK812150	
Pseudephebe pubescens	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184306	OLICH735-13	MK811888	
Pseudephebe pubescens	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184725	OLICH941-13	MK812652	
Pseudevernia furfuracea	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-195999	OLICH1844-14	MK812319	
Pseudevernia furfuracea	Lecanorales	NO, Hedmark, 2016, E. Timdal	O-L-201522	OLICH3984-17	MK812161	
Pseudevernia furfuracea	Lecanorales	NO, Aust-Agder, 2016, S. Rui & E. Timdal	O-L-204977	OLICH4008-17	MK812508	
Pseudevernia furfuracea	Lecanorales	NO, Telemark, 2016, S. Rui & E. Timdal	O-L-205006	OLICH4009-17	MK811934	
Pseudevernia furfuracea	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184698	OLICH882-13	MK812628	
Pseudocyphellaria citrina	Peltigerales	NO, Nord-Trøndelag, 2013, J.T. Klepsland	O-L-197920	OLICH2116-15	MK812391	
Pseudocyphellaria citrina	Peltigerales	NO, Sør-Trøndelag, 2013, J.T. Klepsland	O-L-198050	OLICH2117-15	MK811890	

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Pseudocyphellaria citrina	Peltigerales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201266	OLICH2771-16	MK812527	
Pseudocyphellaria norvegica	Peltigerales	NO, Hordaland, 2006, H. Fjeldstad	O-L-203000	OLICH3242-16	MK812692	
Psilolechia clavulifera	Lecanorales	NO, Akershus, 2009, J.T. Klepsland	O-L-164653	OLICH1081-14	MK811831	
Psilolechia leprosa	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195611	OLICH1544-14	MK812516	
Psilolechia leprosa	Lecanorales	NO, Aust-Agder, 2015, J.T. Klepsland	O-L-204517	OLICH4229-17	MK811951	
Psilolechia leprosa	Lecanorales	NO, Aust-Agder, 2015, J.T. Klepsland	O-L-204519	OLICH4251-17	MK812436	
Psilolechia lucida	Lecanorales	SE, Närke, 2013, M. Bendiksby et al.	O-L-184487	OLICH665-13	MK811768	
Psora decipiens	Lecanorales	NO, Oppland, 2013, J.T. Klepsland	O-L-198348	OLICH2358-15	MK812030	
Psora decipiens	Lecanorales	NO, Troms, 2014, J.T. Klepsland	O-L-200362	OLICH2646-16	MK811804	
Psora globifera	Lecanorales	NO, Nord-Trøndelag, 2011, J.T. Klepsland	O-L-177145	OLICH1319-14	KU873929	no lichen substances

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Psora globifera	Lecanorales	NO, Sør-Trøndelag, 2012, R. Hjelmstad	O-L-184143	OLICH1320-14	KU873932	no lichen substances
Psora globifera	Lecanorales	NO, Buskerud, 2014, J.T. Klepsland	O-L-200597	OLICH2645-16	MK812110	
Psora globifera	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183774	OLICH782-13	KU873928	no lichen substances
Psora globifera	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184327	OLICH820-13	KU873930	no lichen substances
Psora rubiformis	Lecanorales	NO, Oppland, 2012, H. Bratli & R. Haugan	O-L-183466	OLICH1082-14	MK811688	
Psora rubiformis	Lecanorales	NO, Nord-Trøndelag, 2011, J.T. Klepsland	O-L-177142	OLICH1321-14	MK812240	
Psora rubiformis	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195525	OLICH1508-14	KY266957	
Psora rubiformis	Lecanorales	NO, Hordaland, 2013, E. Timdal	O-L-184422	OLICH648-13	MK811706	
Psora rubiformis	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184359	OLICH649-13	MK812000	
Psora vallesiaca	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184392	OLICH650-13	KU873926	norstictic acid

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Psora vallesiaca	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183778	OLICH780-13	KU873927	norstictic acid
Psora vallesiaca	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183760	OLICH781-13	KU873931	norstictic acid
Psorinia conglomerata	Lecanorales	NO, Oppland, 2012, H. Bratli & R. Haugan	O-L-182192	OLICH1061-14	MK812001	stictic acid
Psoroma cinnamomeum	Peltigerales	NO, Sør-Trøndelag, 2013, E. Timdal	O-L-184538	OLICH702-13	MK811978	
Psoroma hypnorum	Peltigerales	NO, Finnmark, 2014, E. Timdal	O-L-195857	OLICH1702-14	KY266971	
Psoroma hypnorum	Peltigerales	NO, Sør-Trøndelag, 2017, E. Timdal	O-L-208202	OLICH4325-17	MK811800	
Psoroma hypnorum	Peltigerales	NO, Sør-Trøndelag, 2013, E. Timdal	O-L-184537	OLICH703-13	MK811764	
Psoronactis dilleniana	Arthoniales	NO, Nord-Trøndelag, 2015, H. Holien	TRH-L-16932	OLICH3649-17	MK812257	
Punctelia stictica	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201333	OLICH2698-16	MK812448	
Punctelia subrudecta	Lecanorales	NO, Rogaland, 2015, T. Tønsberg	BG-L-98118	OLICH3697-17	MK812035	
Punctelia subrudecta	Lecanorales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200662	OLICH4106-17	MK812237	

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Pycnothelia papillaria	Lecanorales	NO, Aust-Agder, 2006, J.T. Klepsland	O-L-151129	OLICH1364-14	MK811765	atranorin, lichesterinic acid
Pycnothelia papillaria	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-200001	OLICH1975-15	MK812272	
Pycnothelia papillaria	Lecanorales	NO, Nord-Trøndelag, 2015, M. Bendiksby et al.	O-L-201299	OLICH2797-16	MK811947	
Pyrenula laevigata	Pyrenulales	NO, Hordaland, 2016, J.T. Klepsland	O-L-206758	OLICH3477-17	MK812685	
Pyrenula laevigata	Pyrenulales	NO, Møre og Romsdal, 2016, J.T. Klepsland	O-L-206773	OLICH3492-17	MK812185	
Pyrenula occidentalis	Pyrenulales	NO, Møre og Romsdal, 2016, J.T. Klepsland	O-L-206777	OLICH3496-17	MK811633	
Racodium rupestre	Capnodiales	NO, Rogaland, 2013, J.T. Klepsland	O-L-198464	OLICH3945-17	MK812095	
Ramalina capitata	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200012	OLICH1986-15	MK811917	
Ramalina capitata	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-195831	OLICH2203-15	MK811626	
Ramalina capitata	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200896	OLICH2549-16	MK812528	

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Ramalina capitata	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184378	OLICH693-13	MK812398	
Ramalina cuspidata	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196016	OLICH1861-14	MK812006	usnic acid
Ramalina cuspidata	Lecanorales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197829	OLICH2118-15	MK811797	
Ramalina farinacea	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196002	OLICH1847-14	MK812207	protocetraric acid, usnic acid
Ramalina farinacea	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-199987	OLICH1961-15	MK812169	protocetraric acid, usnic acid
Ramalina farinacea	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196286	OLICH2216-15	MK812449	protocetraric acid , usnic acid
Ramalina fastigiata	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196289	OLICH2219-15	MK811906	
Ramalina fastigiata	Lecanorales	NO, Vestfold, 2014, J.T. Klepsland	O-L-200570	OLICH2644-16	MK811841	
Ramalina fastigiata	Lecanorales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208026	OLICH4197-17	MK812196	
Ramalina fraxinea	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196288	OLICH2218-15	MK812590	
Ramalina fraxinea	Lecanorales	NO, Vestfold, 2014, J.T. Klepsland	O-L-200571	OLICH4105-17	MK812489	
Ramalina fraxinea	Lecanorales	NO, Akershus, 2012, K.A. Lye	O-L-206861	OLICH4140-17	MK811900	

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Ramalina fraxinea	Lecanorales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208025	OLICH4196-17	MK812162	
Ramalina pollinaria	Lecanorales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196372	OLICH1931-15	MK812166	
Ramalina pollinaria	Lecanorales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200850	OLICH2516-16	MK812114	
Ramalina pollinaria	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200901	OLICH2552-16	MK811866	
Ramalina polymorpha	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195737	OLICH1609-14	KY266885	
Ramalina polymorpha	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195928	OLICH1773-14	MK811690	
Ramalina polymorpha	Lecanorales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-200011	OLICH1985-15	MK811661	
Ramalina polymorpha	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200898	OLICH2551-16	MK812673	
Ramalina siliquosa	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196010	OLICH1855-14	MK811720	protocetraric acid (minor), salazinic acid (major), usnic acid (trace)
Ramalina subfarinacea	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196284	OLICH2214-15	MK812104	norstictic acid (major), usnic acid (major)
Ramalina subfarinacea	Lecanorales	NO, Nordland, 2014, J.T. Klepsland	O-L-200339	OLICH2643-16	MK812227	norstictic acid (major), usnic acid (major)

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Ramboldia elabens	Lecanorales	NO, Sør-Trøndelag, 2007, E. Timdal	O-L-158501	OLICH411-13	MK812637	
Ramboldia elabens	Lecanorales	NO, Hedmark, 2008, R. Haugan	O-L-160473	OLICH412-13	MK812132	
Ramboldia elabens	Lecanorales	NO, Oppland, 2004, T.H. Hofton	O-L-136707	OLICH413-13	MK812702	
Ramboldia elabens	Lecanorales	NO, Nord-Trøndelag, 2006, J.T. Klepsland	O-L-183511	OLICH472-13	MK811668	
Ramboldia elabens	Lecanorales	NO, Finnmark, 2011, E. Timdal	O-L-170692	OLICH473-13	MK811870	
Ramboldia elabens	Lecanorales	NO, Nordland, 2011, T. Tønsberg	BG-L-95299	OLICH580-13	MK812420	
Rhizocarpon badioatrum	Rhizocarpales	NO, Oppland, 2010, E. Timdal	O-L-163824	OLICH002-11	KU687450	no lichen substances
Rhizocarpon badioatrum	Rhizocarpales	NO, Buskerud, 2010, E. Timdal	O-L-163839	OLICH003-11	KU687453	no lichen substances
Rhizocarpon bolanderi	Rhizocarpales	NO, Aust-Agder, 2010, E. Timdal	O-L-163373	OLICH023-11	KU687451	norstictic acid (trace), stictic acid (major)
Rhizocarpon chioneum	Rhizocarpales	NO, Finnmark, 2014, E. Timdal	O-L-195535	OLICH1510-14	KY266951	
Rhizocarpon copelandii	Rhizocarpales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184329	OLICH766-13	KU687447	

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Rhizocarpon copelandii	Rhizocarpales	NO, Hedmark, 2013, E. Timdal	O-L-184521	OLICH790-13	KU687456	norstictic acid
Rhizocarpon copelandii	Rhizocarpales	NO, Oppland, 2012, S. Rui & E. Timdal	O-L-180002	OLICH837-13	KU687455	norstictic acid
Rhizocarpon geminatum	Rhizocarpales	NO, Finnmark, 2014, E. Timdal	O-L-195564	OLICH1520-14	KY266908	
Rhizocarpon jemtlandicum	Rhizocarpales	NO, Telemark, 2010, E. Timdal	O-L-163364	OLICH015-11	KU687445	norstictic acid (trace), stictic acid (major)
Rhizocarpon jemtlandicum	Rhizocarpales	NO, Nordland, 2010, E. Timdal	O-L-163756	OLICH019-11	KU687446	norstictic acid (minor), stictic acid (major)
Rhizocarpon jemtlandicum	Rhizocarpales	NO, Finnmark, 2011, E. Timdal	O-L-170452	OLICH803-13	KU687460	stictic acid
Rhizocarpon leptolepis	Rhizocarpales	FI, Inarin Lappi, 2014, E. Timdal	O-L-195500	OLICH1504-14	KU687449	
Rhizocarpon pycnocarpoides	Rhizocarpales	NO, Nordland, 2012, R. Haugan	O-L-183808	OLICH511-13	KT800004	no lichen substances
Rhizocarpon pycnocarpoides	Rhizocarpales	NO, Nord-Trøndelag, 2012, R. Haugan	O-L-183810	OLICH512-13	KT800005	no lichen substances
Rhizocarpon pycnocarpoides	Rhizocarpales	NO, Oppland, 2012, S. Rui & E. Timdal	O-L-179903	OLICH513-13	KT800002	
Rhizocarpon pycnocarpoides	Rhizocarpales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184267	OLICH531-13	KT800003	no lichen substances
Rhizocarpon rittokense	Rhizocarpales	NO, Finnmark, 2014, M. Westberg	O-L-195695	OLICH1567-14	KU687458	

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Rhizocarpon rittokense	Rhizocarpales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184293	OLICH542-13	KU687459	
Rhizocarpon santessonii	Rhizocarpales	NO, Oppland, 2011, R. Haugan & E. Timdal	O-L-169805	OLICH432-13	KU687454	
Rhizocarpon subgeminatum	Rhizocarpales	NO, Hedmark, 2010, R. Haugan	O-L-166501	OLICH033-11	KU687457	barbatic acid
Rhizocarpon subgeminatum	Rhizocarpales	NO, Sør-Trøndelag, 2010, R. Haugan	O-L-165477	OLICH034-11	KU687452	barbatic acid
Rhizocarpon suomiense	Rhizocarpales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184330	OLICH769-13	KU687448	
Rhizoplaca melanophthalma	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195929	OLICH1774-14	MK812478	unknown substances, usnic acid
Rhizoplaca melanophthalma	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201366	OLICH2743-16	MK811669	
Rinodina balanina	Caliciales	NO, Finnmark, 2014, T.B. Wheeler	O-L-195705	OLICH1577-14	KY266842	
Rinodina disjuncta	Caliciales	NO, Nord-Trøndelag, 2014, H. Holien	TRH-L-15387	OLICH3675-17	MK812529	
Rinodina disjuncta	Caliciales	NO, Nord-Trøndelag, 2011, H. Holien	TRH-L-14116	OLICH3676-17	MK812438	

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Rinodina mniaraea	Caliciales	NO, Svalbard, 2001, A. Elvebakk	TROM_L_565871	OLICH3552-17	MK812098	
Rinodina roboris	Caliciales	NO, Rogaland, 2016, J.T. Klepsland	O-L-206765	OLICH3484-17	MK811851	
Romjularia lurida	Lecideales	NO, Akershus, 2010, E. Timdal	O-L-169118	OLICH150-11	MK811769	
Ropalospora lugubris	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195537	OLICH1511-14	KY266893	
Ropalospora lugubris	Umbilicariales	NO, Nordland, 2015, T. Tønsberg & A. Botnen	BG-L-98792	OLICH3732-17	MK812617	
Ropalospora lugubris	Umbilicariales	NO, Finnmark, 2011, E. Timdal	O-L-170519	OLICH3969-17	MK812431	
Ropalospora lugubris	Umbilicariales	NO, Sør-Trøndelag, 2011, R. Haugan	O-L-168439	OLICH3970-17	MK812670	
Ropalospora lugubris	Umbilicariales	NO, Sogn og Fjordane, 2011, R. Haugan	O-L-173455	OLICH3971-17	MK812610	
Rusavskia elegans	Teloschistales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196351	OLICH1910-15	MK812165	
Rusavskia elegans	Teloschistales	NO, Oppland, 2013, J.T. Klepsland	O-L-200120	OLICH2630-16	MK812212	
Rusavskia sorediata	Teloschistales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196353	OLICH1912-15	MK811744	

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Sagiolechia protuberans	Ostropales	NO, Finnmark, 2014, M. Westberg	O-L-195714	OLICH1586-14	KY266966	
Sagiolechia protuberans	Ostropales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201297	OLICH3853-17	MK811691	
Sclerophora peronella	Coniocybales	SE, Södermanland, 2015, S. Kistenich & E. Timdal	O-L-200846	OLICH2432-16	MK812193	
Scoliciosporum umbrinum	Lecanorales	NO, Oslo, 2014, J.T. Klepsland	O-L-200123	OLICH3322-16	MK812255	
Scoliciosporum umbrinum	Lecanorales	NO, Akershus, 2012, E. Timdal	O-L-177770	OLICH822-13	MK812271	
Siphula ceratites	Pertusariales	NO, Finnmark, 2014, E. Timdal	O-L-195919	OLICH1764-14	KY266949	
Siphula ceratites	Pertusariales	NO, Nord-Trøndelag, 2015, E. Timdal et al.	O-L-201291	OLICH2679-16	MK812106	
Siphula ceratites	Pertusariales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196042	OLICH3790-17	MK812034	
Solorina saccata	Peltigerales	NO, Buskerud, 2014, E. Timdal	O-L-203070	OLICH3286-16	MK812538	
Sphaerophorus fragilis	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195650	OLICH1562-14	MK812306	

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Sphaerophorus fragilis	Lecanorales	NO, Hordaland, 2014, E. Timdal	O-L-195800	OLICH1672-14	MK811867	
Sphaerophorus fragilis	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195977	OLICH1822-14	KY266958	
Sphaerophorus fragilis	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196043	OLICH3799-17	MK812393	
Sphaerophorus globosus	Lecanorales	NO, Troms, 2014, E. Timdal	O-L-195651	OLICH1563-14	MK811784	sphaerophorin
Sphaerophorus globosus	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195855	OLICH1700-14	KY266841	sphaerophorin
Sphaerophorus globosus	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195918	OLICH1763-14	KY266859	sphaerophorin, squamatic acid
Sphaerophorus globosus	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195949	OLICH1794-14	KY266898	
Sphaerophorus globosus	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-199995	OLICH1969-15	MK812694	sphaerophorin, thamnolic acid, unknowns
Sphaerophorus globosus	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200918	OLICH2578-16	MK812575	sphaerophorin
Sphaerophorus globosus	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196029	OLICH3793-17	MK811761	sphaerophorin, squamatic acid
Sphaerophorus globosus	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201265	OLICH3844-17	MK812327	sphaerophorin, thamnolic acid

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Staurolemma omphalarioides	Peltigerales	NO, Nordland, 2013, J.T. Klepsland	O-L-197994	OLICH2467-16	MK811827	
Staurolemma omphalarioides	Peltigerales	NO, Nordland, 2014, J.T. Klepsland	O-L-200306	OLICH2640-16	MK811929	
Stereocaulon alpinum	Lecanorales	NO, Telemark, 2006, E. Timdal	O-L-149404	OLICH925-13	MK812253	atranorin, lobaric acid
Stereocaulon capitellatum	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201401	OLICH4182-17	MK812320	anziaic acid, atranorin, miriquidic acid, perlatolic acid
Stereocaulon coniophyllum	Lecanorales	NO, Sogn og Fjordane, 2010, S. Vatne	O-L-169267	OLICH713-13	MK811930	lobaric acid, atranorin
Stereocaulon cumulatum	Lecanorales	NO, Finnmark, 2014, M. Svensson	O-L-195924	OLICH1769-14	KY266904	
Stereocaulon cumulatum	Lecanorales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200899	OLICH2529-16	MK812171	
Stereocaulon cumulatum	Lecanorales	NO, Hedmark, 2013, E. Timdal	O-L-184515	OLICH674-13	MK812474	
Stereocaulon cumulatum	Lecanorales	NO, Oppland, 2012, E. Timdal	O-L-182037	OLICH711-13	MK812671	
Stereocaulon grande	Lecanorales	NO, Troms, 2003, E. Timdal	O-L-122991	OLICH917-13	MK812157	atranorin, bourgeanic acid, lobaric acid
Stereocaulon pileatum	Lecanorales	NO, Aust-Agder, 2016, S. Rui & E. Timdal	O-L-204980	OLICH4012-17	MK812053	
Stereocaulon pileatum	Lecanorales	NO, Østfold, 2002, B.P. Løfall & A. Often	O-L-113318	OLICH908-13	MK812510	atranorin, lobaric acid

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Stereocaulon pileatum	Lecanorales	NO, Oslo, 2011, H. Bratli & R. Haugan	O-L-174391	OLICH909-13	MK811864	atranorin, lobaric acid
Stereocaulon rivulorum	Lecanorales	NO, Troms, 2003, E. Timdal	O-L-127342	OLICH899-13	MK812658	anziaic acid, atranorin, perlatolic acid
Stereocaulon rivulorum	Lecanorales	NO, Finnmark, 2003, E. Timdal	O-L-123189	OLICH901-13	MK811662	anziaic acid, atranorin, perlatolic acid
Stereocaulon symphycheilum	Lecanorales	NO, Oppland, 2012, H. Bratli	O-L-183927	OLICH706-13	MK811941	lobaric acid
Stereocaulon symphycheilum	Lecanorales	NO, Buskerud, 2012, S. Rui & E. Timdal	O-L-184640	OLICH730-13	MK812328	atranorin, lobaric acid
Stereocaulon symphycheilum	Lecanorales	NO, Sør-Trøndelag, 2009, E. Timdal	O-L-158545	OLICH895-13	MK812189	atranorin, lobaric acid
Sticta fuliginoides	Peltigerales	NO, Rogaland, 2012, B. Nordén & J.B. Jordal	O-L-199414	OLICH2638-16	MK811703	
Sticta sylvatica	Peltigerales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200925	OLICH2539-16	MK811909	
Tephromela atra	Lecanorales	NO, Finnmark, 2014, A. Millanes	O-L-195861	OLICH1706-14	KY266944	
Tephromela atra	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196054	OLICH3815-17	MK812606	
Tephromela atra	Lecanorales	NO, Telemark, 2009, R. Haugan & S. Reiso	O-L-160434	OLICH399-13	MK812380	

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Tephromela grumosa	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-190787	OLICH2594-16	MK812127	atranorin, lichesterinic acid
Tetramelas chloroleucus	Caliciales	NO, Sør-Trøndelag, 2014, H. Holien	TRH-L-15560	OLICH3601-17	MK811644	
Tetramelas chloroleucus	Caliciales	NO, Nordland, 2013, J.T. Klepsland	O-L-198004	OLICH4032-17	MK812300	
Thamnolia vermicularis	Pertusariales	NO, Finnmark, 2014, E. Timdal	O-L-195710	OLICH1582-14	KY266979	
Thamnolia vermicularis	Pertusariales	NO, Troms, 2014, E. Timdal	O-L-195773	OLICH1645-14	MK812339	
Thamnolia vermicularis	Pertusariales	NO, Finnmark, 2014, H. Holien	O-L-195948	OLICH1793-14	KY266969	
Thamnolia vermicularis	Pertusariales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196363	OLICH1922-15	MK811783	
Thamnolia vermicularis	Pertusariales	NO, Buskerud, 2015, E. Timdal & S. Rui	O-L-200905	OLICH3840-17	MK811627	
Thelotrema lepadinum	Ostropales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199496	OLICH3321-16	MK812434	
Thelotrema macrosporum	Ostropales	NO, Hordaland, 2013, B. Nordén & J.B. Jordal	O-L-199493	OLICH3320-16	MK812111	

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Tholurna dissimilis	Caliciales	NO, Buskerud, 2014, E. Timdal	O-L-195822	OLICH2194-15	MK812234	
Tholurna dissimilis	Caliciales	NO, Nord-Trøndelag, 2015, H. Holien	TRH-L-16038	OLICH2760-16	MK811683	
Timdalia intricata	Acarosporales	NO, Telemark, 2013, E. Timdal	O-L-194731	OLICH3244-16	MK812713	
Timdalia intricata	Acarosporales	NO, Oppland, 2015, E. Timdal	O-L-201379	OLICH4168-17	MK812246	
Timdalia intricata	Acarosporales	NO, Hedmark, 2017, E. Timdal	O-L-207764	OLICH4349-17	MK811937	psoromic acid
Timdalia intricata	Acarosporales	SE, Jämtland, 2017, E. Timdal	O-L-208174	OLICH4350-17	MK811871	psoromic acid
Timdalia intricata	Acarosporales	SE, Härjedalen, 2017, E. Timdal	O-L-208190	OLICH4351-17	MK812454	psoromic acid
Toensbergia leucococca	Rhizocarpales	NO, Nordland, 2012, T. Tønsberg	BG-L-94650	OLICH592-13	MK812615	
Toninia alutacea	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195931	OLICH1776-14	MG838194	
Toninia alutacea	Lecanorales	NO, Buskerud, 2014, J.T. Klepsland	O-L-200591	OLICH2636-16	MG838164	
Toninia alutacea	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184350	OLICH551-13	MG838166	

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Toninia alutacea	Lecanorales	NO, Troms, 2011, J.T. Klepsland	O-L-177188	OLICH561-13	MG838197	
Toninia alutacea	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183755	OLICH783-13	MG838156	
Toninia aromatica	Lecanorales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200557	OLICH3317-16	MG838189	
Toninia aromatica	Lecanorales	NO, Troms, 2009, J.T. Klepsland	O-L-167368	OLICH560-13	MG838184	
Toninia aromatica	Lecanorales	NO, Nordland, 2011, R. Haugan	O-L-174042	OLICH614-13	MG838161	
Toninia candida	Lecanorales	NO, Buskerud, 2014, E. Timdal	O-L-196069	OLICH1885-14	MG838163	
Toninia candida	Lecanorales	NO, Buskerud, 2011, K.A. Lye & T. Høitomt	O-L-177883	OLICH557-13	MG838185	
Toninia coelestina	Lecanorales	NO, Nordland, 2010, J.T. Klepsland	O-L-175215	OLICH285-13	MG838190	
Toninia nordlandica	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195601	OLICH1537-14	MG838198	
Toninia nordlandica	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184351	OLICH552-13	MG838159	
Toninia opuntioides	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195603	OLICH1539-14	MG838192	
Toninia opuntioides	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183630	OLICH559-13	MG838168	triterpenoid (minor)

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Toninia opuntioides	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184387	OLICH635-13	MG838172	triterpenoid (possible trace)
Toninia opuntioides	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183757	OLICH784-13	MG838158	
Toninia rosulata	Lecanorales	NO, Nord-Trøndelag, 2011, J.T. Klepsland	O-L-177141	OLICH1323-14	MG838195	
Toninia sedifolia	Lecanorales	NO, Finnmark, 2014, E. Timdal	O-L-195599	OLICH1536-14	MG838193	
Toninia sedifolia	Lecanorales	NO, Aust-Agder, 2010, J.T. Klepsland	O-L-183585	OLICH558-13	MG838201	no lichen substances
Toninia sedifolia	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184381	OLICH637-13	MG838196	
Toninia sedifolia	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184332	OLICH817-13	MG838162	
Toninia squalida	Lecanorales	NO, Oppland, 2011, R. Haugan & E. Timdal	O-L-169774	OLICH553-13	MG838183	
Toninia squalida	Lecanorales	NO, Oppland, 2012, H. Bratli & R. Haugan	O-L-182301	OLICH554-13	MG838182	
Toninia squalida	Lecanorales	NO, Hordaland, 2013, E. Timdal	O-L-184426	OLICH638-13	MG838181	

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Toninia squalida	Lecanorales	NO, Sør-Trøndelag, 2013, E. Timdal	O-L-184539	OLICH639-13	MG838200	
Toninia taurica	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184333	OLICH546-13	MG838174	
Toninia verrucarioides	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184389	OLICH641-13	MG838167	
Toninia verrucarioides	Lecanorales	NO, Oppland, 2011, J.T. Klepsland	O-L-183717	OLICH850-13	MG838179	
Trapelia coarctata	Trapeliales	NO, Oslo, 2014, J.T. Klepsland	O-L-200174	OLICH3316-16	MK812584	
Trapelia coarctata	Trapeliales	NO, Hedmark, 2012, R. Haugan et al.	O-L-182063	OLICH562-13	MK812526	
Trapelia coarctata	Trapeliales	NO, Telemark, 2012, E. Timdal	O-L-179924	OLICH563-13	MK812177	
Trapelia corticola	Trapeliales	NO, Nord-Trøndelag, 2011, H. Holien	TRH-L-14083	OLICH993-13	MK811911	
Trapelia placodioides	Trapeliales	NO, Nord-Trøndelag, 2012, R. Haugan	O-L-183857	OLICH1324-14	MK812664	
Trapelia placodioides	Trapeliales	NO, Telemark, 1996, H. Bratli & E. Timdal	O-L-20869	OLICH3976-17	MK812430	
Trapelia placodioides	Trapeliales	NO, Hedmark, 2015, R. Haugan	O-L-204154	OLICH4366-17	MK812690	gyrophoric acid, lecanoric acid

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Trapelia placodioides	Trapeliales	NO, Oslo, 2014, J.T. Klepsland	O-L-200245	OLICH4453-17	MK812050	
Trapelia placodioides	Trapeliales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184337	OLICH548-13	MK812359	
Trapelia placodioides	Trapeliales	NO, Oppland, 2012, S. Rui & E. Timdal	O-L-179918	OLICH569-13	MK812043	
Trapeliopsis flexuosa	Trapeliales	NO, Nord-Trøndelag, 2013, H. Holien	TRH-L-15151	OLICH994-13	MK811801	
Trapeliopsis granulosa	Trapeliales	NO, Sør-Trøndelag, 2007, E. Timdal	O-L-158481	OLICH565-13	MK812609	
Trapeliopsis granulosa	Trapeliales	NO, Oslo, 2011, R. Haugan	O-L-177342	OLICH566-13	MK811943	
Trapeliopsis granulosa	Trapeliales	NO, Troms, 2011, J.T. Klepsland	O-L-177175	OLICH567-13	MK812708	
Trapeliopsis granulosa	Trapeliales	NO, Finnmark, 2011, E. Timdal	O-L-170698	OLICH568-13	MK812198	
Trapeliopsis granulosa	Trapeliales	NO, Nord-Trøndelag, 2013, H. Holien	TRH-L-15150	OLICH995-13	MK812377	
Trapeliopsis pseudogranulosa	Trapeliales	NO, Telemark, 2015, E. Timdal	O-L-208001	OLICH3875-17	MK812568	
Trapeliopsis pseudogranulosa	Trapeliales	NO, Rogaland, 2011, J.T. Klepsland	O-L-183692	OLICH852-13	MK812270	

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Tremolecia atrata	Hymeneliales	NO, Sør-Trøndelag, 2012, M. Bendiksby et al.	O-L-179677	OLICH4017-17	MK812298	
Tremolecia atrata	Hymeneliales	NO, Finnmark, 2011, E. Timdal	O-L-170578	OLICH606-13	MK811647	
Tremolecia atrata	Hymeneliales	NO, Finnmark, 2011, E. Timdal	O-L-170776	OLICH607-13	MK812097	
Tuckermanopsis chlorophylla	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196001	OLICH1846-14	MK811914	
Tuckermanopsis chlorophylla	Lecanorales	NO, Akershus, 2014, S. Rui & E. Timdal	O-L-196329	OLICH2260-15	MK812387	
Umbilicaria arctica	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195898	OLICH1743-14	KY266911	
Umbilicaria arctica	Umbilicariales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200892	OLICH2545-16	MK812428	
Umbilicaria arctica	Umbilicariales	NO, Aust-Agder, 2016, S. Rui & E. Timdal	O-L-204983	OLICH4016-17	MK812268	
Umbilicaria cinereorufescens	Umbilicariales	NO, Buskerud, 2014, E. Timdal	O-L-195830	OLICH2202-15	MK811655	
Umbilicaria cinereorufescens	Umbilicariales	NO, Oppland, 2015, E. Timdal	O-L-201349	OLICH2734-16	MK812545	
Umbilicaria crustulosa	Umbilicariales	NO, Hordaland, 2014, E. Timdal	O-L-195804	OLICH1676-14	MK811776	

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Umbilicaria crustulosa	Umbilicariales	NO, Buskerud, 2015, S. Rui & E. Timdal	O-L-200941	OLICH2662-16	MK812060	
Umbilicaria cylindrica	Umbilicariales	NO, Hordaland, 2014, E. Timdal	O-L-195808	OLICH1680-14	MK811748	
Umbilicaria cylindrica	Umbilicariales	NO, Finnmark, 2014, T. Tønsberg	O-L-195872	OLICH1717-14	KY266907	
Umbilicaria cylindrica	Umbilicariales	NO, Finnmark, 2014, H. Holien	O-L-195957	OLICH1802-14	KY266835	
Umbilicaria cylindrica	Umbilicariales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196354	OLICH1913-15	MK812072	
Umbilicaria cylindrica	Umbilicariales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184711	OLICH929-13	MK812153	
Umbilicaria decussata	Umbilicariales	NO, Sør-Trøndelag, 2015, M. Stapnes Dahl et al.	O-L-201307	OLICH2692-16	MK812293	
Umbilicaria decussata	Umbilicariales	NO, Oppland, 2015, E. Timdal	O-L-201367	OLICH2744-16	MK812686	
Umbilicaria dendrophora	Umbilicariales	NO, Sør-Trøndelag, 2013, E. Timdal	O-L-184529	OLICH731-13	MK812276	
Umbilicaria deusta	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195766	OLICH1638-14	KY266862	
Umbilicaria deusta	Umbilicariales	NO, Telemark, 2014, E. Timdal	O-L-195790	OLICH1662-14	MK812011	

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Umbilicaria deusta	Umbilicariales	NO, Vestfold, 2015, E. Timdal	O-L-198940	OLICH2493-16	MK812096	
Umbilicaria deusta	Umbilicariales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184712	OLICH930-13	MK812412	
Umbilicaria havaasii	Umbilicariales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200930	OLICH2556-16	MK812376	
Umbilicaria hirsuta	Umbilicariales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196282	OLICH2212-15	MK812437	
Umbilicaria hirsuta	Umbilicariales	NO, Vestfold, 2015, E. Timdal	O-L-198937	OLICH2490-16	MK811754	
Umbilicaria hirsuta	Umbilicariales	NO, Oppland, 2015, E. Timdal	O-L-201350	OLICH2735-16	MK812136	
Umbilicaria hyperborea	Umbilicariales	NO, Hordaland, 2014, E. Timdal	O-L-195803	OLICH1675-14	MK812311	
Umbilicaria hyperborea	Umbilicariales	NO, Finnmark, 2014, R. Haugan	O-L-195879	OLICH1724-14	KY266918	
Umbilicaria hyperborea	Umbilicariales	NO, Finnmark, 2014, R. Haugan	O-L-195925	OLICH1770-14	KY266976	
Umbilicaria hyperborea	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195971	OLICH1816-14	KY266928	
Umbilicaria hyperborea	Umbilicariales	NO, Troms, 2014, E. Timdal	O-L-195656	OLICH1996-15	MK812016	
Umbilicaria hyperborea	Umbilicariales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184713	OLICH931-13	MK811931	

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Umbilicaria lyngei	Umbilicariales	NO, Sør-Trøndelag, 2000, B. P. Løfall	O-L-78093	OLICH4074-17	MK812368	no lichen substances
Umbilicaria lyngei	Umbilicariales	NO, Oppland, 2009, R. Haugan	O-L-159920	OLICH4075-17	MK812559	
Umbilicaria lyngei	Umbilicariales	NO, Sør-Trøndelag, 2014, J.T. Klepsland	O-L-200558b	OLICH4096-17	MK811698	
Umbilicaria nylanderiana	Umbilicariales	NO, Hedmark, 2015, M. Stapnes Dahl et al.	O-L-201305	OLICH2670-16	MK812167	
Umbilicaria nylanderiana	Umbilicariales	NO, Hedmark, 2016, E. Timdal	O-L-201508	OLICH3983-17	MK812209	
Umbilicaria nylanderiana	Umbilicariales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184729	OLICH950-13	MK812316	
Umbilicaria polyrrhiza	Umbilicariales	NO, Oslo, 2014, E. Timdal	O-L-199999	OLICH1973-15	MK812126	
Umbilicaria polyrrhiza	Umbilicariales	NO, Østfold, 2013, R. Braathen & E.W. Hanssen	O-L-201768	OLICH2595-16	MK812352	
Umbilicaria polyrrhiza	Umbilicariales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208345	OLICH4384-17	MK812239	
Umbilicaria proboscidea	Umbilicariales	NO, Finnmark, 2014, H. Holien	O-L-195719	OLICH1591-14	KY266839	
Umbilicaria proboscidea	Umbilicariales	NO, Troms, 2014, E. Timdal	O-L-195772	OLICH1644-14	MK811704	

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Umbilicaria proboscidea	Umbilicariales	NO, Finnmark, 2014, R. Haugan	O-L-195923	OLICH1768-14	KY266848	
Umbilicaria proboscidea	Umbilicariales	NO, Finnmark, 2014, A. Millanes	O-L-195936	OLICH1781-14	KY266866	
Umbilicaria proboscidea	Umbilicariales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196361	OLICH1920-15	MK812366	
Umbilicaria proboscidea	Umbilicariales	NO, Buskerud, 2014, S. Rui & E. Timdal	O-L-196322	OLICH2252-15	MK812345	
Umbilicaria rigida	Umbilicariales	SE, Torne Lappmark, 2014, E. Timdal	O-L-195668	OLICH2005-15	MK812082	
Umbilicaria rigida	Umbilicariales	NO, Møre og Romsdal, 2015, R. Haugan	O-L-203950	OLICH4077-17	MK811777	
Umbilicaria spodochroa	Umbilicariales	NO, Vestfold, 2015, E. Timdal	O-L-198938	OLICH2491-16	MK812519	
Umbilicaria torrefacta	Umbilicariales	NO, Troms, 2014, E. Timdal	O-L-195634	OLICH1553-14	MK812116	
Umbilicaria torrefacta	Umbilicariales	NO, Finnmark, 2014, E. Timdal	O-L-195843	OLICH1688-14	KY266942	
Umbilicaria torrefacta	Umbilicariales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200900	OLICH2530-16	MK812602	
Umbilicaria vellea	Umbilicariales	NO, Telemark, 2014, E. Timdal	O-L-196275	OLICH1949-15	MK811710	

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Umbilicaria virginis	Umbilicariales	NO, Møre og Romsdal, 2015, R. Haugan	O-L-203963	OLICH3162-16	MK812576	
Usnea dasypoga	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184699	OLICH1411-14	MK812140	
Usnea dasypoga	Lecanorales	NO, Telemark, 2014, E. Timdal	O-L-196273	OLICH1947-15	MK812173	
Usnea dasypoga	Lecanorales	NO, Oslo, 2014, E. Timdal	O-L-200005	OLICH1979-15	MK812052	
Usnea flammea	Lecanorales	NO, Vest-Agder, 2013, J.T. Klepsland	O-L-197827	OLICH2127-15	MK811847	constictic acid, stictic acid, usnic acid
Usnea fragilescens	Lecanorales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200604	OLICH2634-16	MK812021	
Usnea subfloridana	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184700	OLICH1412-14	MK811828	
Usnea subfloridana	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200814	OLICH2585-16	MK811766	
Usnea subfloridana	Lecanorales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200728	OLICH2623-16	MK812453	thamnolic acid, usnic acid
Usnea wasmuthii	Lecanorales	NO, Sør-Trøndelag, 2013, J.T. Klepsland	O-L-198061	OLICH2131-15	MK812232	barbatic acid, salazinic acid, usnic acid
Usnea wasmuthii	Lecanorales	NO, Rogaland, 2013, J.T. Klepsland	O-L-197890	OLICH2132-15	MK812501	barbatic acid, usnic acid
Varicellaria lactea	Pertusariales	NO, Oppland, 2015, R. Haugan	O-L-204064	OLICH4380-17	MK812539	lecanoric acid, variolaric acid

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Variospora flavescens	Teloschistales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200626	OLICH4054-17	MK812667	
Variospora thallincola	Teloschistales	NO, Rogaland, 2014, J.T. Klepsland	O-L-200631	OLICH4056-17	MK812547	
Verrucaria tenebrosa	Verrucariales	No, Nord-Trøndelag, 2015, J. Pykälä 48333	H-WG2_2130	OLICH2807-16	KY682961	
Vulpicida juniperinus	Lecanorales	NO, Oppland, 2013, M. Bendiksby et al.	O-L-184298	OLICH1406-14	MK812148	
Vulpicida juniperinus	Lecanorales	NO, Nord-Trøndelag, 2015, R. Haugan	O-L-201311	OLICH3857-17	MK812404	
Vulpicida juniperinus	Lecanorales	NO, Sør-Trøndelag, 2017, E. Timdal	O-L-208203	OLICH4356-17	MK812500	
Vulpicida pinastri	Lecanorales	NO, Finnmark, 2014, H. Holien	O-L-195944	OLICH1789-14	KY266954	
Vulpicida pinastri	Lecanorales	NO, Telemark, 2015, S. Rui & E. Timdal	O-L-200937	OLICH2563-16	MK811933	
Vulpicida pinastri	Lecanorales	NO, Buskerud, 2013, S. Rui & E. Timdal	O-L-184701	OLICH883-13	MK812364	pinastric acid, vulpinic acid
Xanthomendoza borealis	Teloschistales	NO, Sør-Trøndelag, 2014, E. Timdal	O-L-196336	OLICH2274-15	MK812442	
Xanthomendoza borealis	Teloschistales	NO, Oppland, 2013, J.T. Klepsland	O-L-198333	OLICH2359-15	MK811659	

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Xanthomendoza fulva	Teloschistales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196295	OLICH2225-15	MK812265	
Xanthomendoza fulva	Teloschistales	NO, Hedmark, 2006, B. P. Løfall et al.	O-L-147714	OLICH4440-17	MK812487	
Xanthomendoza fulva	Teloschistales	NO, Sogn og Fjordane, 2012, B. Nordén & J.B. Jordal	O-L-199397	OLICH4442-17	MK811973	
Xanthoparmelia conspersa	Lecanorales	NO, Telemark, 2014, S. Rui & E. Timdal	O-L-196278	OLICH1951-15	MK812598	
Xanthoparmelia conspersa	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196296	OLICH2226-15	MK812585	
Xanthoparmelia conspersa	Lecanorales	NO, Rogaland, 2016, S. Rui & E. Timdal	O-L-204999	OLICH3992-17	MK812248	
Xanthoparmelia loxodes	Lecanorales	NO, Akershus, 2014, E. Timdal	O-L-199990	OLICH1964-15	MK811808	
Xanthoparmelia loxodes	Lecanorales	NO, Vestfold, 2014, S. Rui & E. Timdal	O-L-196281	OLICH2211-15	MK811902	
Xanthoparmelia loxodes	Lecanorales	NO, Aust-Agder, 2013, J.T. Klepsland	O-L-198317	OLICH2375-16	MK811982	
Xanthoparmelia loxodes	Lecanorales	NO, Østfold, 2012, K.A. Lye	O-L-206876	OLICH4133-17	MK812427	
Xanthoparmelia loxodes	Lecanorales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208018	OLICH4190-17	MK812543	
Xanthoparmelia loxodes	Lecanorales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208343	OLICH4272-17	MK812627	

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Xanthoparmelia protomatrae	Lecanorales	NO, Aust-Agder, 2015, H. Riddervold	O-L-201574	OLICH3243-16	MK812594	
Xanthoparmelia pulla	Lecanorales	NO, Sør-Trøndelag, 2014, R. Haugan	O-L-196012	OLICH1857-14	MK812429	
Xanthoparmelia pulla	Lecanorales	NO, Østfold, 2016, S. Rui & E. Timdal	O-L-208019	OLICH4191-17	MK812706	
Xanthoparmelia pulla	Lecanorales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208344	OLICH4273-17	MK812285	
Xanthoparmelia stenophylla	Lecanorales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208338	OLICH4268-17	MK811834	
Xanthoparmelia tinctina	Lecanorales	SE, Bohuslän, 2012, E. Timdal	O-L-184585	OLICH3233-16	MK812507	
Xanthoparmelia tinctina	Lecanorales	NO, Østfold, 2017, S. Rui & E. Timdal	O-L-208333	OLICH4264-17	MK812642	
Xanthoparmelia verruculifera	Lecanorales	NO, Oppland, 2015, E. Timdal	O-L-201346	OLICH2731-16	MK812281	
Xanthoria parietina	Teloschistales	NO, Telemark, 2014, E. Timdal	O-L-195782	OLICH1654-14	MK812349	
Xanthoria parietina	Teloschistales	NO, Oslo, 2014, M. Bendiksby et al.	O-L-196081	OLICH1897-14	MK812134	
Xanthoria parietina	Teloschistales	NO, Østfold, 2012, K.A. Lye	O-L-206852	OLICH4143-17	MK811702	
Xylographa parallela	Trapeliales	NO, Finnmark, 2011, E. Timdal	O-L-170700	OLICH3294-16	MK812221	no lichen substances

Species	Order	Voucher	Sample ID	Process ID	GenBank ID	Chemistry
Xylographa vitiligo	Trapeliales	NO, Nord-Trøndelag, 2014, J.T. Klepsland	O-L-200273	OLICH3315-16	MK812010	

Temporal coverage

Notes: The sampled material was collected in the period 1995–2017, with 90% being after 2010 and with a peak of 532 specimens in 2014 (Fig. 3).

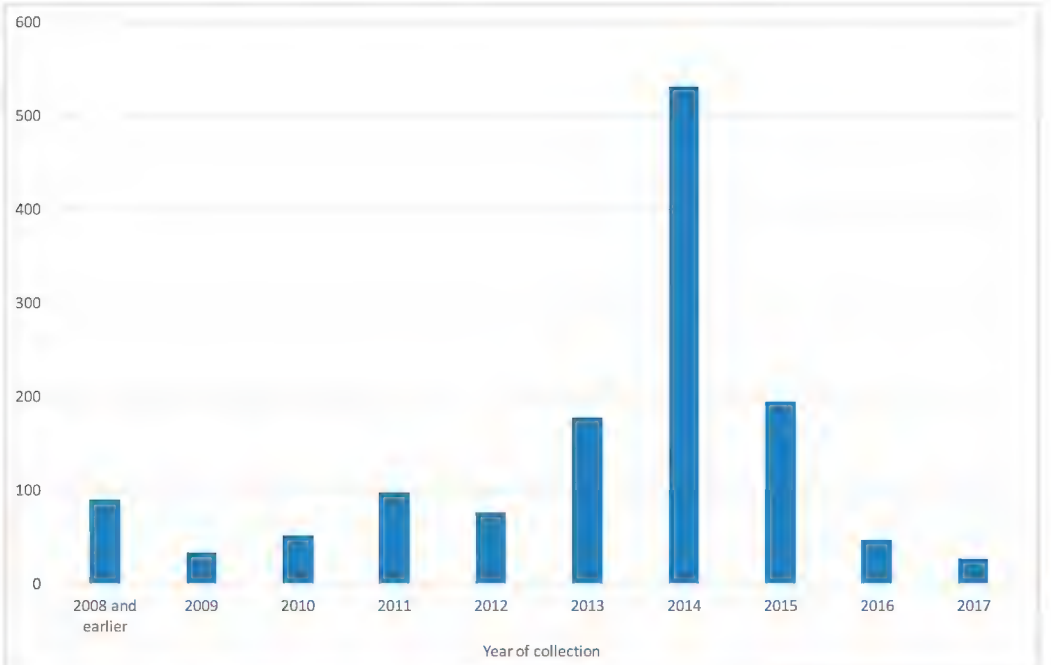

Figure 3. doi

Distribution of year of collection of the specimens in the OLICH dataset

Usage rights

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Data resources

Data package title: DNA barcodes of Nordic lichens

Resource link: dx.doi.org/10.5883/DS-OLICH

Number of data sets: 1

Data set name: DS-OLICH

Download URL: http://www.boldsystems.org/index.php/Public_SearchTerms?query=DS-OLICH

Data format: dwc, xml, tsv, fasta, trace

Description: The OLICH dataset can be downloaded from the Public Data Portal of BOLD (www.boldsystems.org) in different formats (data as dwc, xml or tsv, sequences as fasta and trace files as trace). Alternatively, BOLD users can log in and access the dataset via the Workbench platform of BOLD. All records are also searchable within BOLD using the search function of the database.

Depending on future funding, the OLICH project will continue sequencing Nordic lichens for the BOLD database, with the ultimate (although unrealistic) goal of complete coverage. Hence, the dataset will be updated in the future with new sequences and information. The version of the dataset at the time of writing the manuscript is included as Suppl. materials 1, 2, 3, 4 in the form of two text files for record information as downloaded from BOLD, one text file with the collecting and identification data in Darwin Core Standard format (downloaded from BOLD and formatted by the authors) and of a fasta file containing all sequences as downloaded from BOLD.

It should be noted that, as the BOLD database is not compliant with the Darwin Core Standard format, the Darwin Core formatted file (dwc) that can be downloaded from BOLD is not strictly Darwin Core formatted. For a proper Darwin Core formatted file, see Suppl. material 3.

All records have images and geographical coordinates in BOLD.

Column labels below follow the labels downloaded in the tsv format. Columns with no content in our dataset are left out in the list below.

Column label	Column description
processid	Unique identifier for the sample
sampleid	Unique identifier for the voucher specimen, i.e. museum catalogue number in either lichen herbarium or DNA bank at the Natural History Museum, University of Oslo
recordID	Entry number in the database
catalognum	Same as sampleid; Unique identifier for the voucher specimen, i.e. museum catalogue number in either lichen herbarium or DNA bank at the Natural History Museum, University of Oslo
institution_storing	The full name of the institution where specimen is stored
phylum_taxID	Taxonomic identifier of level Phylum
phylum_name	Phylum name
class_taxID	Taxonomic identifier of level Class
class_name	Class name

order_taxID	Taxonomic identifier of level Order
order_name	Order name
family_taxID	Taxonomic identifier of level Family
family_name	Family name
genus_taxID	Taxonomic identifier of level Genus
genus_name	Genus name
species_taxID	Taxonomic identifier of level Species
species_name	Species name
identification_provided_by	Name of primary individual repsonsible for providing taxonomic identification of the specimen
identification_method	The method(s) used to identify the specimen
identification_reference	Authorship of species name
voucher_status	Status of the specimen in an accessioning process
tissue_type	A brief description of the type of tissue analysed
collectors	Name(s) of the individual(s) responsible for collecting the sample in the field
habitat	A description of the habitat
Notes	Notes regarding species identification of the specimen or other note concerning the specimen.
lat	The geographical latitude (in decimal degrees) of the geographic centre of a location
long	The geographical longitude (in decimal degrees) of the geographic centre of a location
coord_accuracy	An estimation of the uncertainty of the coordinates given in the lat and long columns (metres)
elev	Elevation of sampling site. Measured in metres relative to sea level.
country	Name of country in which the organism was collected
province_state	Name of the province (in Norway "fylke") in which the organism was collected
region	Name of municipality in which the organism was collected
exactsite	Name of exact locality where the organism was collected
image_ids	Entry number in the database
image_urls	URL(s) from which the image(s) of the organism(s) can be accessed
media_descriptors	Term depicting, in this case, side of organism photographed, i.e. dorsal
captions	Short description of part of organism photographed
copyright_years	The year of the licence declaration for the image

copyright_licences	Type of licence associated with the image
copyright_institutions	The primary licence holder's institutional affiliation
photographers	The individual responsible for photographing

Additional information

Summary statistics and genetic distances

The dataset contains on average 2.6 records per species, ranging from one (184 species) to 12 (one species) records per species. Average sequence length was 541 bp (including sequences that did not include the whole ITS region due to unreadable trace files). The shortest sequence in the dataset was an incomplete sequence, 229 bp long. The species with the shortest complete ITS region was *Haematomma ocroloeucum* with 481 bp. The longest ITS region was 856 bp from *Leptogium cochleatum*. However, the two sequences of the latter species did not align with the others at the start of the sequence and it is possible that introns in the SSU rDNA are included.

We calculated intra- and interspecific genetic distances for the three genera with most sampled species and performed barcode gap analyses on those. Distances and key statistics are found in Table 2.

Table 2.

Key statistics and genetic distances for the three genera with the most sampled species; *Ramalina*, *Umbilicaria* and *Cladonia*.

Genus	***Ramalina***	***Umbilicaria***	***Cladonia***
Number of species in genus in this dataset	9	19	47
Number of records	26	52	122
Average number of records per species	2.9	2.7	2.6
Average intraspecific distances	0–1.3%	0–2.3%	0–3.4%
Interspecific distances	0.4–8.2%	2.5–12.1%	0.2–15.6%

In *Ramalina*, there was an overlap between intra- and interspecific distances (Table 2, Fig. 4a). The overlap is caused by the one species pair with higher maximum intraspecific distance than the distance to the nearest neighbour (Fig. 4b); i.e. *R. farinacea* had an intraspecific distance of 0.9% and a distance of 0.4% to *R. subfarinacea*. If this species pair is excluded from the distance-dataset, a barcode gap will occur at 2% (Fig. 4a).

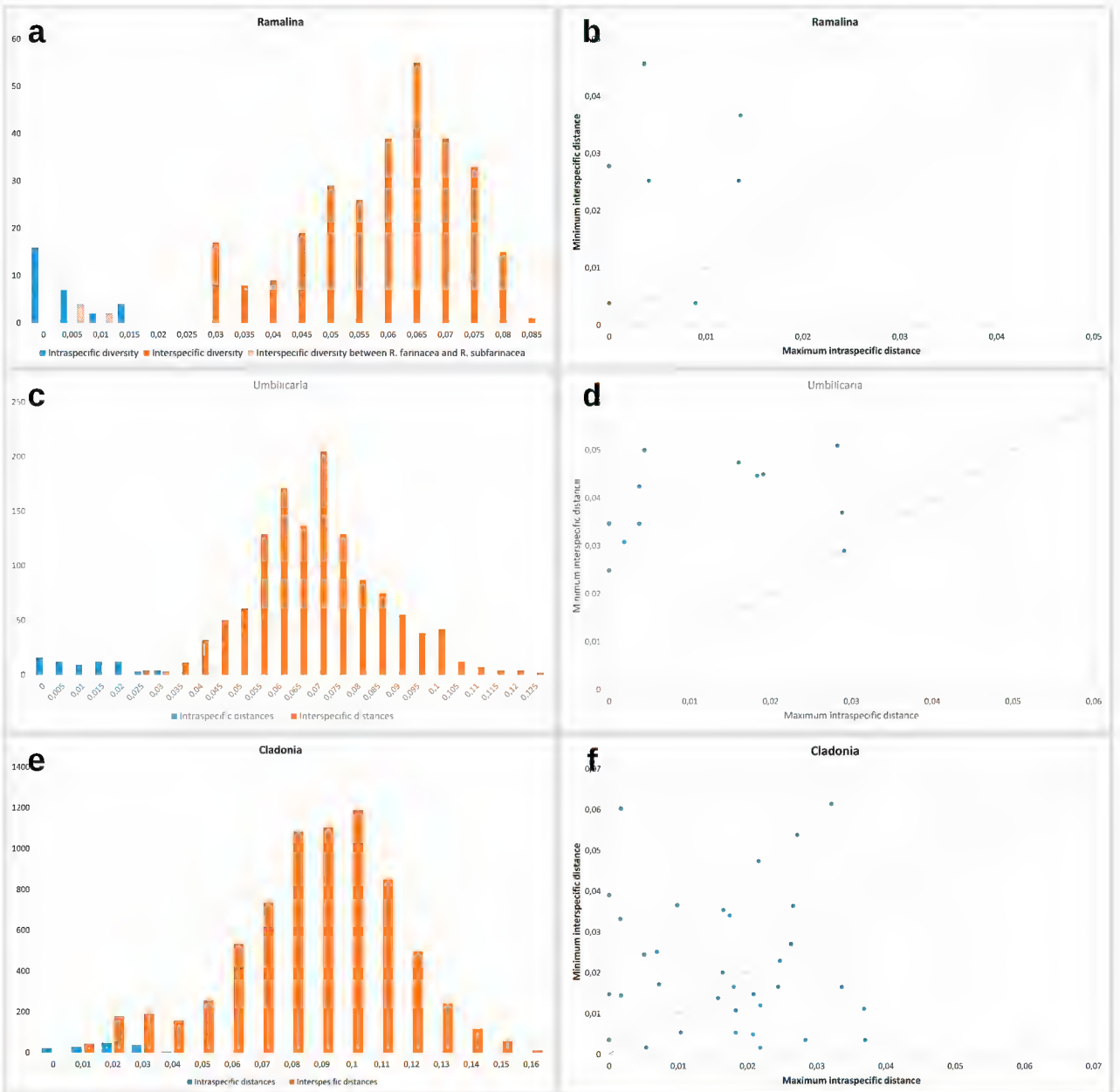

Figure 4.

Genetic distances within the three lichen genera with most sampled species in the OLICH dataset.

a: Frequency distribution of intraspecific distances (blue) and interspecific distances (orange). A gap between intra- and interspecific distances illustrates the barcode gap in the genus. doi

b: Scatterplots representing maximum intraspecific distances versus minimum distance to closest neighbour for all species with more than one specimen per species, in each of the three genera. doi

c: Frequency distribution of intraspecific distances (blue) and interspecific distances (orange). A gap between intra- and interspecific distances illustrates the barcode gap in the genus. doi

d: Scatterplots representing maximum intraspecific distances versus minimum distance to closest neighbour for all species with more than one specimen per species, in each of the three genera. doi

e: Frequency distribution of intraspecific distances (blue) and interspecific distances (orange). A gap between intra- and interspecific distances illustrates the barcode gap in the genus. doi

f: Scatterplots representing maximum intraspecific distances versus minimum distance to closest neighbour for all species with more than one specimen per species, in each of the three genera. doi

For *Umbilicaria*, there were no species pairs with higher maximum intraspecific distance than the distance to the nearest neighbour, but one species had the same maximum intraspecific distance as the distance to the nearest neighbour, namely *U. proboscidea* whose closest neighbour was *U. virginis* (Fig. 4d). There is thus no barcode gap in our *Umbilicaria* dataset, as the intra- and interspecific distances overlaps around 3% (Fig. 4c).

Whereas *Ramalina* and *Umbilicaria*, despite the above-mentioned issues, show a tendency for displaying a barcode gap, *Cladonia* does not show the same pattern. There is no gap, but rather overlapping, smooth curves of intra- and interspecific distances in the barplot (Table 2, Fig. 4e). Most of the species pairs that disrupt the pattern are complexes where species are known to be sometimes difficult to distinguish with traditional characters and these are found below the line in Fig. 4f: *C. coniocraea/gracilis*, *C. maxima/ecmocyna* and *C. cenotea/subfurcata/crispata/squamosa*.

ITS has previously been shown to give poor resolution amongst *Cladonia* species (Fontaine et al. 2010, Kotelko and Piercey-Normore 2010, Pino-Bodas et al. 2013) and a lack of barcode gap has been demonstrated (Kelly et al. 2011). This probably has to do with their high morphological plasticity (Pino-Bodas et al. 2013) which may have led to erroneous identifications/taxonomy, but there might also be evolutionary explanations, such as incomplete lineage sorting (van Velzen et al. 2012).

Observations

From the phylogenetically and BLASTn based quality control, some specific taxonomic observations were made that are listed below.

***Alectoria sarmentosa* (Ach.) Ach. ssp. *vexillifera* (Nyl.) D.Hawksw.**: This subspecies is currently accepted in the Nordic flora (Velmala and Myllys 2011, Nordin et al. 2019). It differs morphologically from spp. *sarmentosa* in forming a more prostrate thallus with broader and more flattened main branches and, ecologically, in growing on the ground or on rocks mainly in coastal and alpine areas. Subspecies *sarmentosa* grows mainly on trunks and branches of conifers in boreal forests. Our sequence of spp. *vexillifera* (OLICH1478) is nested within our four sequences of spp. *sarmentosa*, however, which does not support the recognition of the subspecies (Fig. 5).

***Brodoa oroarctica* (Krog) Goward**: The species differs from *B. atrofusca* (Schaer.) Goward in the shape of the thallus and lobes and in the lack of physodic acid in most of the thallus except for in some lobe tips (Krog 1974). The former species is circumpolar arctic-alpine, with southernmost occurrences in Europe in the southern Scandinavian mountains, whereas the latter is a European species known mainly from the Alps and Pyrenées and with scattered occurrences in Northern Europe. Our four barcode sequences of *B. oroarctica* are however nested within the four sequences of *B. atrofusca* (Fig. 6), and the complex seems to be in need of revision.

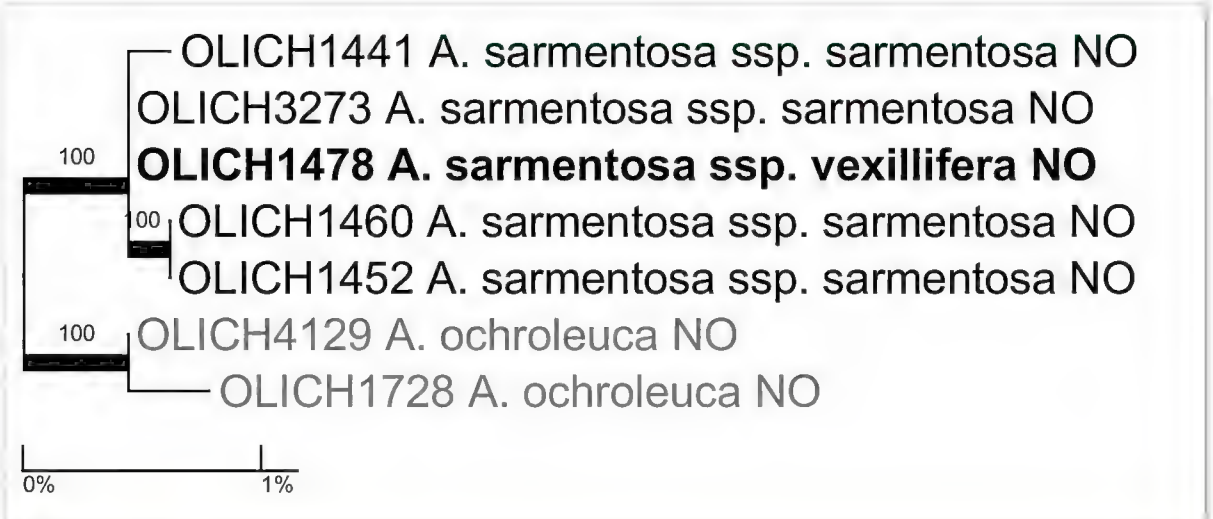

Figure 5. doi

Maximum likelihood tree based on the OLICH sequences of *Alectoria sarmentosa*.

Numbers above branches and thick lines indicate bootstrap support ≥ 70%. Bold font indicates focus taxon and grey font the outgroup. The two-letter ISO country codes are included. This applies for all phylogram figures (Figs 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15).

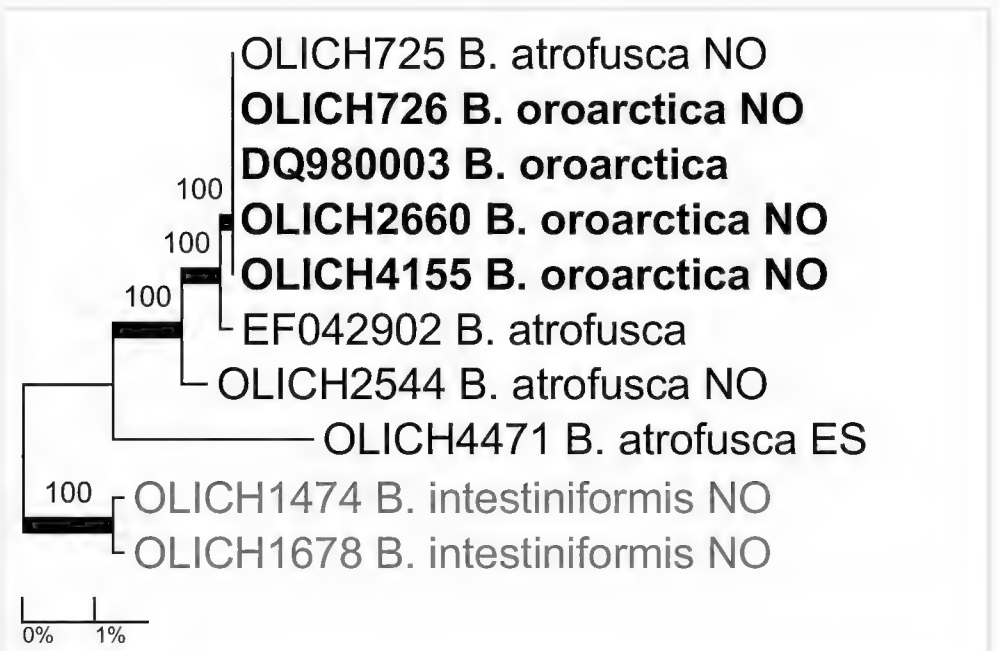

Figure 6. doi

Maximum likelihood tree of *Brodoa atrofusca* and *B. oroarctica* based on all available ITS sequences.

***Bryobilimbia fissuriseda* (Poelt) Timdal, Marthinsen & Rui, comb. nov.**

Mycobank: MB 830330

Basionym: *Lecidea fissuriseda* Poelt, Mitteilungen der Botanischen Staatssammlung München 4: 181, 1961. ≡ *Mycobilimbia fissuriseda* (Poelt) Poelt & Hafellner, Herzogia 8: 56, 1989. Type: Switzerland, Berner Oberland, Gipfelgrader Niesen, Nordhänge, alt. 2300 m, 1955, Poelt B55189 (M!, holotype).

This rarely collected species was described from the Alps in the large, collective genus *Lecidea* Ach. (Poelt 1961). It was later transferred to the segregate genus *Mycobilimbia* Rehm by Poelt & Hafellner (in Hafellner 1989). Partly due to the presence of characteristic blue, K+ green granules in the hymenium and the hypothecium, Poelt (1961) and Timdal (1992) assumed it was closely related to *M. hypnorum* (Lib.) Kalb & Hafellner (syn. *Lecidea fusca* (Schaer.) Th. Fr.). Fryday et al. (2014), based on a molecular study, excluded *M. hypnorum* from *Mycobilimbia* and placed it, with four additional species, in the new genus *Bryobilimbia* Fryday et al. *Mycobilimbia fissuriseda* was not included in that study, but our phylogenetic tree, based on the DNA barcodes (Fig. 7), shows that it is, in fact, closely related to *B. diapensiae* and *B. hypnorum* and it is hence here transferred to *Bryobilimbia*.

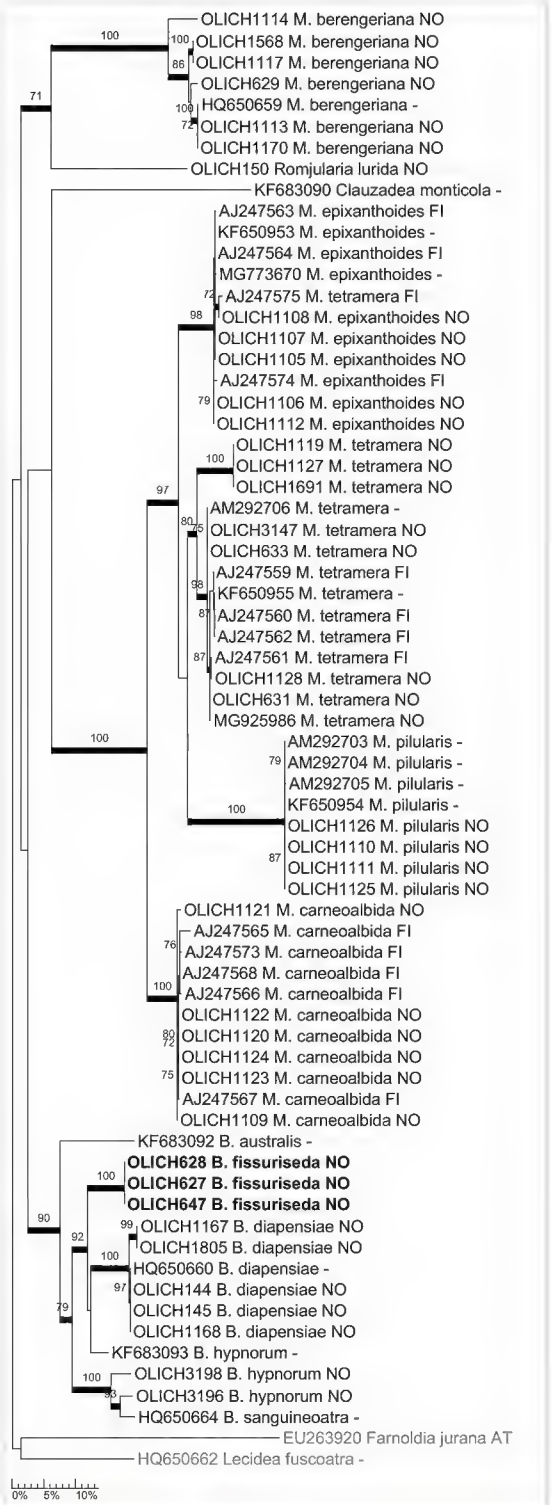

Figure 7. doi

Maximum likelihood tree of *Bryobilimbia* and *Mycobilimbia* based on all available ITS sequences. The presumedly related genera *Clauzadea* and *Romjularia* are included and *Farnoldia* and *Lecidea* are used as the outgroup.

***Bryoria capillaris* (Ach.) Brodo & D.Hawksw.**: The species is still accepted in the Nordic checklist (Nordin et al. 2019), despite several recent molecular phylogenies (Myllys et al. 2011, Velmala et al. 2014, Myllys et al. 2016, Boluda et al. 2019) showing it nested within *B. implexa* (Hoffm.) Brodo & D. Hawksw. The OLICH dataset shows the same topography (Fig. 8): *B. capillaris* nested within *B. implexa*. However, all our specimens of the *B. capillaris/implexa* complex were identified by morphology prior to TLC analysis and the correlation holds: all pale specimens (*B. capillaris*) contain alectorialic acid (plus accessories) and barbatolic acid, whereas no dark specimens (*B. implexa*) do. Fumarprotocetraric and protocetraric acids occur variably in both species. Either the DNA barcode marker and the other markers used in recent phylogenetic studies do not distinguish between two species which may be recognised by the correlation of thallus colour and secondary chemistry or the two "species" are conspecific and their morphological/chemical difference is caused by other factors. For example, the presence/absence of an additional symbiont (basidiomycete yeast) were found likely to trigger the production of vulpinic acid in the cortex of *Bryoria fremontii/tortuosa* by Spribille et al. (2016).

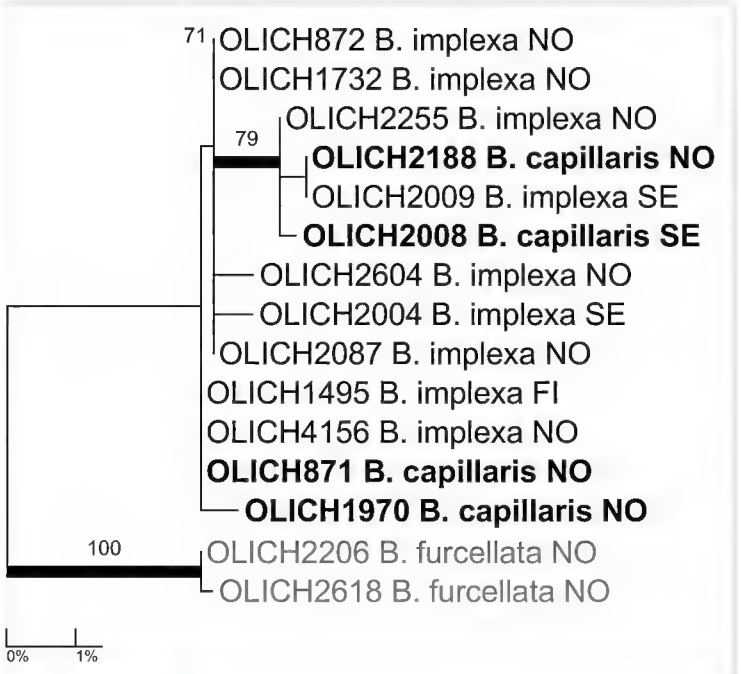

Figure 8. doi

Maximum likelihood tree of *Bryoria capillaris* and *B. implexa* based on the OLICH sequences.

***Cetrelia cetrarioides* (Duby) W.L. Culb. & C.F. Culb. and *C. monachorum* (Zahlbr.) W.L. Culb. & C.F. Culb.**: The three chemotypes of *Cetrelia olivetorum* (Nyl.) W.L. Culb. & C.F. Culb. s. lat., currently recognised in the Nordic countries (Bjelland et al. 1997, Obermayer and Mayrhofer 2007, Nordin et al. 2019), were recently shown to represent three distinct species in the phylogenetic analysis by Mark et al. (2019). The diagnostic, main compounds of those species are imbricaric acid in *C. monachorum*, olivetoric acid in *C. olivetorum* s. str. and perlatolic acid in *C. cetrarioides* (Mark et al. 2019). The seven specimens sequenced in the OLICH project fell into the *C. cetrarioides* and *C. monachorum* clades (Fig. 9) and the TLC analyses of the sequenced specimens showed the chemotypes were in accordance with the species identifications (Table 1).

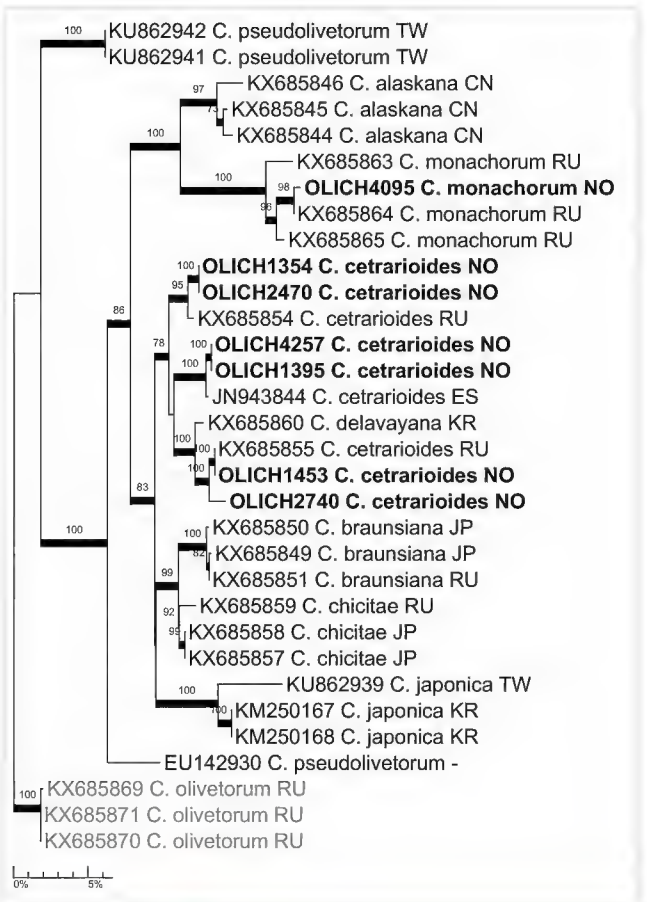

Figure 9. doi

Maximum likelihood tree of the OLICH sequences of *Cetrelia*, with selected ITS sequences from Mark et al. (2019).

***Hypotrachyna afrorevoluta* (Krog & Swinscow) Krog & Swinscow**: The species is morphologically and chemically quite similar to *H. revoluta* (Flörke) Hale and the OLICH sequences (Fig. 10) confirm the presence of the two species in the Nordic countries. See Elix and Thell (2011) for the subtile morphological differences between the species.

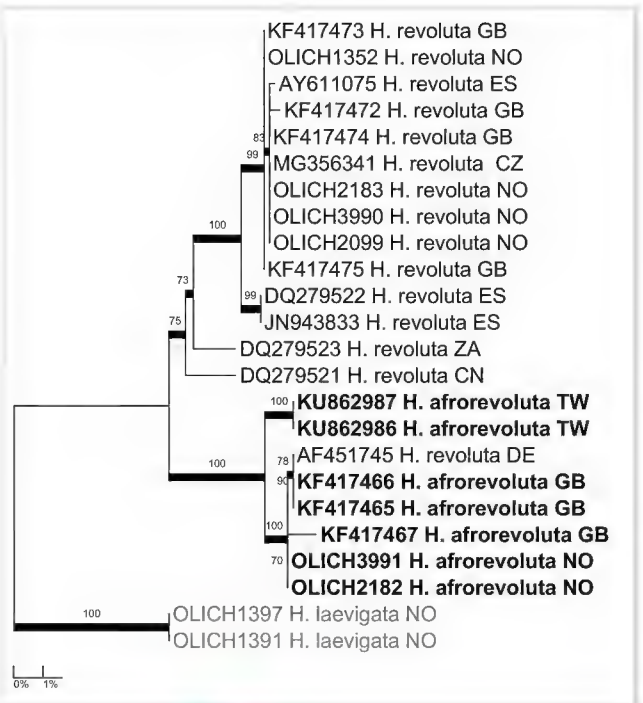

Figure 10. doi

Maximum likelihood tree of the OLICH sequences of *Hypotrachyna afrorevolulta* and *H. revoluta*, with all available ITS sequences in GenBank.

***Nephroma tangeriense* (Maheu & A.Gillet) Zahlbr.**: The species was recently reported as new to the Nordic countries (Klepsland 2013) from two collections from Rogaland county. The OLICH project has sequenced one of those (OLICH2019), as well as four additional collections from Hordaland and Vest-Agder counties and confirms its identity and distinction from *N. laevigatum* Ach. (Fig. 11).

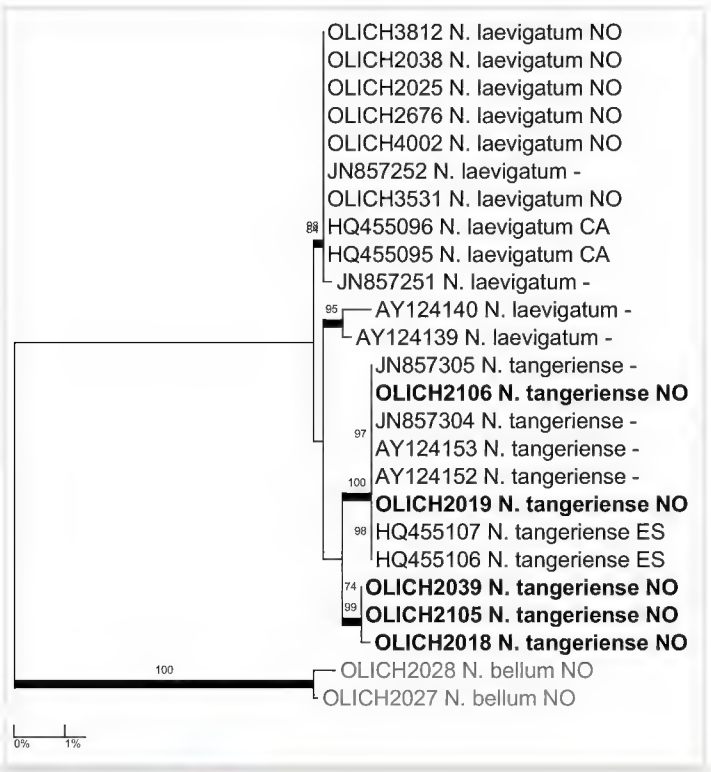

Figure 11. doi

Maximum likelihood tree based on the OLICH sequences of *Nephroma laevigatum* and *N. tangeriense*, with selected ITS sequences from GenBank.

Peltigera "neocanina": BLASTn search revealed the identity of OLICH1878, which was originally identified as *P. canina* (L.) Willd., as *P.* "*neocanina*". This is still an invalid name despite the taxon, which must be regarded as a morphologically cryptic species, has been known since the phylogenetic study of *Peltigera* by Miadlikowska and Lutzoni (2000). Jüriado et al. (2017) showed its presence in Estonia and Magain et al. (2018) in Norway.

***Pseudocyphellaria citrina* (Gyeln.) Lücking, Moncada & S. Stenroos** : The *Pseudocyphellaria* species with yellow soralia, occurring in the Nordic countries, is currently named *P. crocata* (L.) Vain. (Nordin et al. 2019). Lücking et al. (2017b) showed that *P. crocata* was heterogeneous and split it into 13 species. European material was not included in that study and it remained unknown which species occurs in our area. The sequences obtained from three Norwegian specimens in the OLICH project all belong in the *P. citrina* clade of Lücking et al. (2017b) (Fig. 12).

***Psoroma cinnamomeum* Malme**: The specimen from which OLICH702 was generated was originally identified as *Psoroma tenue* Henssen var. *boreale* Henssen, but BLASTn search against GenBank indicated its identity as *P. cinnamomeum*. A phylogenetic analysis, based on most of the ITS sequences of *Psoroma* in GenBank (including those used by Park et al. 2018), supported this identification as OLICH702 and came out in a strongly supported clade with the six other specimens of *P. cinnamomeum*, two of which

are from southernmost Chile and four from Svalbard (Fig. 13). The clade was the sister of the strongly supported clade of the two specimens of *P. tenue* in GenBank, both from Antarctica. Both *P. cinnamomeum* and *P. tenue* were described from Tierra del Fuego, var. *boreale* from USA, Colorado (cf. Henssen and Renner 1981). OLICH702 contains porphyrilic acid and two unknown compounds (apparently related to porphyrilic acid due to the colour and fluorescence on the chromatograms) and hence fits the current concept of *P. tenue* var. *boreale* (cf. Jørgensen 2007). Unless molecular studies show that there are two morphologically very similar species in the Northern Hemisphere, both containing porphyrilic acid, we believe *P. cinnamomeum* is the correct name for the taxon currently known as *P. tenue* var. *boreale*.

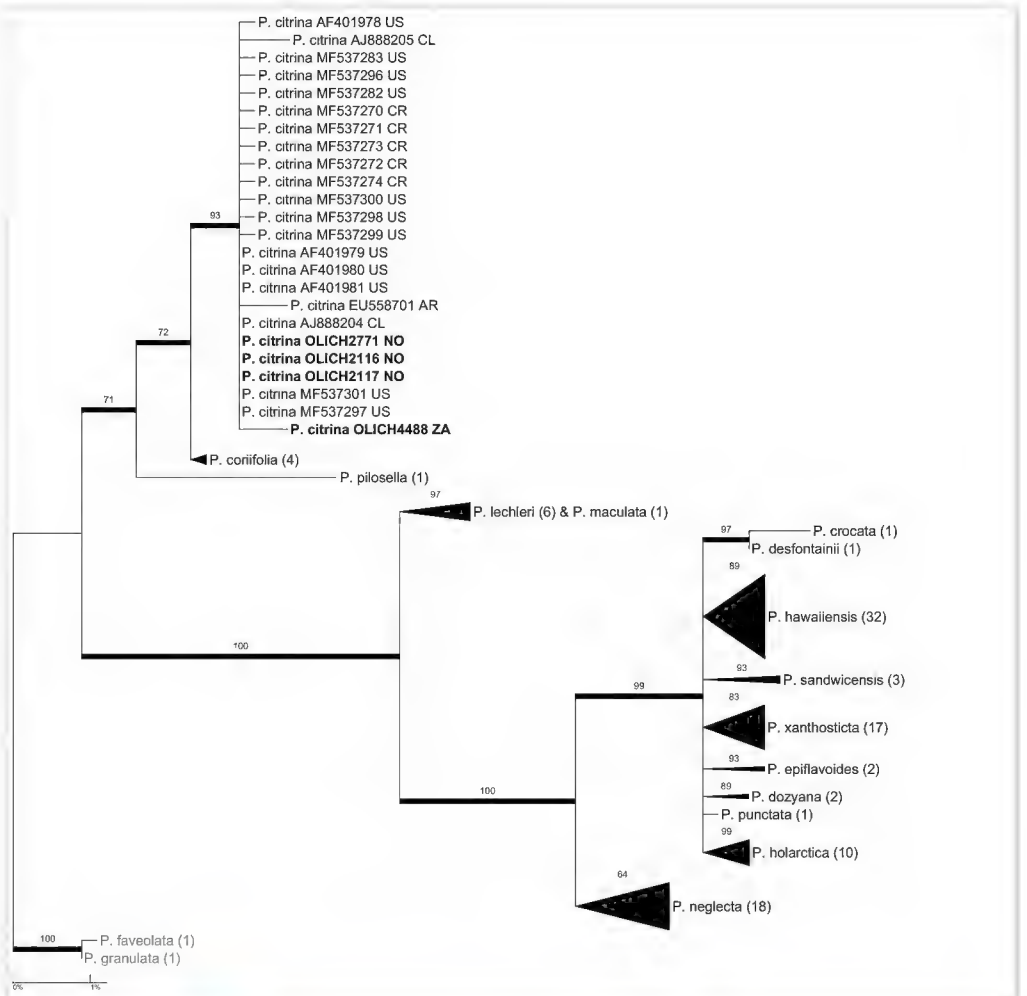

Figure 12. doi

Maximum likelihood tree of the *Pseudocyphellaria crocata* complex with the OLICH sequences added to those of Lücking et al. (2017b).

***Ramalina capitata* (Ach.) Nyl.**: The species has often been included in *R. polymorpha* (Lilj.) Ach. in the past (e.g. Krog and James 1977), but is now usually accepted as distinct (e.g. Nimis et al. 2018, Nordin et al. 2019). In our phylogeny (Fig. 14), Nordic and western European material of the two species are mostly well separated, but the four sequences from Turkey in GenBank are deviant and the complex seems to be in need of further study.

***Ramalina subfarinacea* (Cromb.) Nyl.**: Our two sequences of this species, as well as the two ITS sequences available in GenBank, are nested in the clade of *Ramalina farinacea* (L.) Ach. in our phylogeny (Fig. 15). According to Krog and James (1977), there are subtle morphological differences between the species, but apparently the major distinguishing

feature is the ecology: mainly on coastal rock (*R. subfarinacea*) vs. mainly on bark of deciduous, inland trees (*R. farinacea*). More study is needed in order to evaluate the taxonomic status of *R. subfarinacea*.

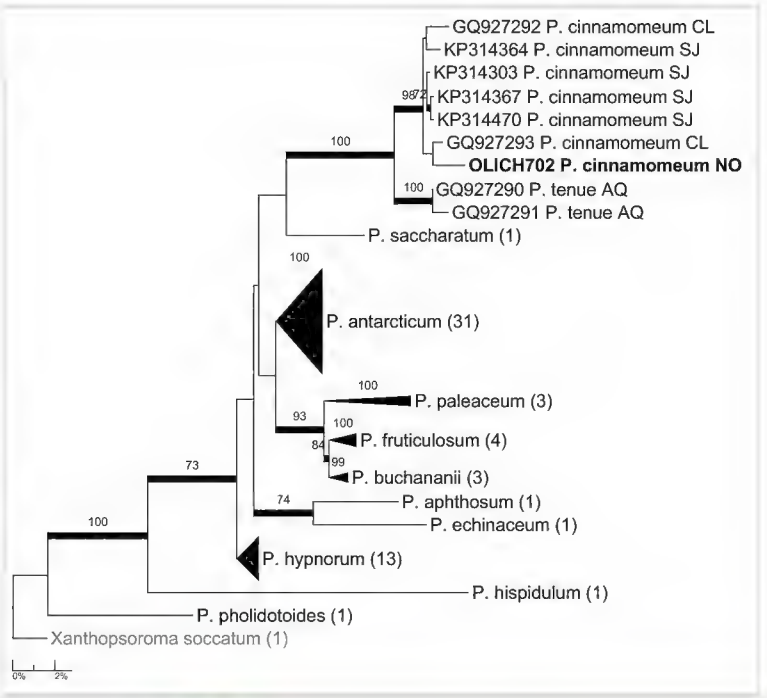

Figure 13. doi

Maximum likelihood tree of *Psoroma* based on all available ITS sequences.

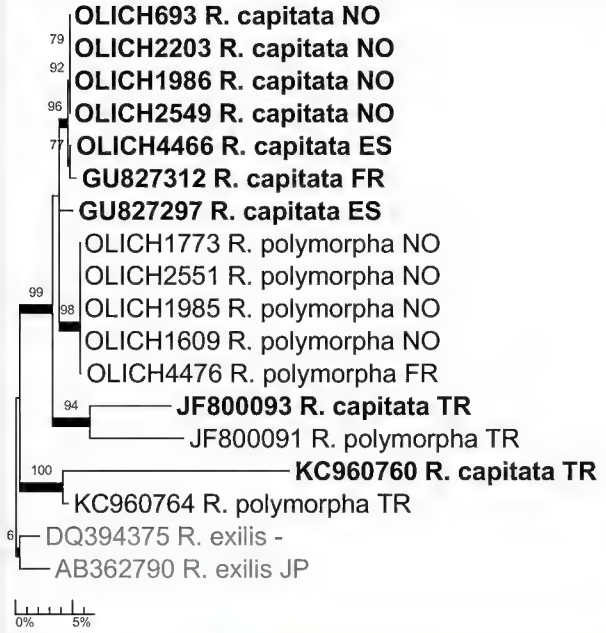

Figure 14. doi

Maximum likelihood tree of the *Ramalina capitata/polymorpha* complex, based on all available ITS sequences.

***Sticta fuliginoides* Magain & Sérus.**: BLASTn search of the sequence of an originally identified *Sticta fuliginosa* (Hoffm.) Ach. (OLICH2638) showed 99.4–100% similarity with the five sequences of *S. fuliginoides* and 90.0–90.2% similarity with the 9 sequences of *S. fuliginosa* in the phylogeny of Magain and Serusiaux (2015). This confirms the presence of *S. fuliginoides* in the Nordic countries, as recently reported by Ekman et al. (2019), based on morphological characters.

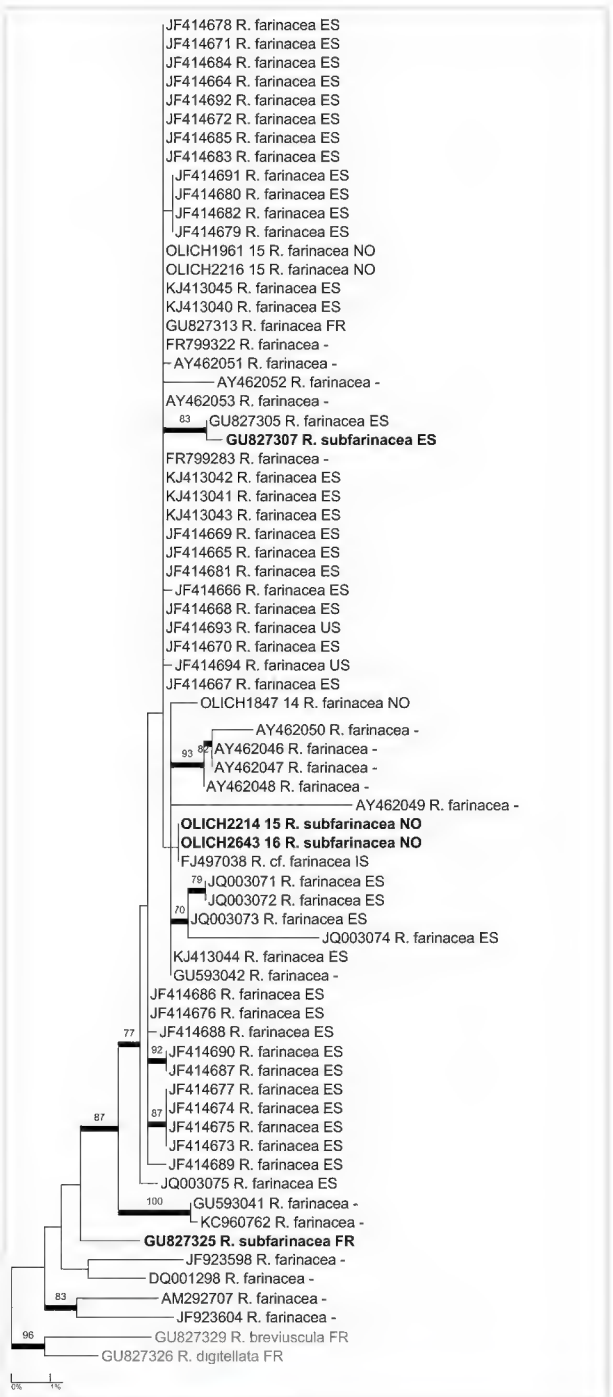

Figure 15. doi

Maximum likelihood tree of the *Ramalina farinacea/subfarinacea* complex, based on all available ITS sequences.

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Supplementary materials

Suppl. material 1: OLICH library - Processing details doi

Authors: Gunnhild Marthinsen, Siri Rui, Einar Timdal
Data type: Record information - processing details on ITS sequences
Brief description: The file includes information about all records in BOLD for the OLICH library, i.e. the DS-OLICH dataset, at time of writing. It contains data on ITS sequences. The data are as downloaded from BOLD without further processing.
Download file (492.24 kb)

Suppl. material 2: OLICH library - Specimen details doi

Authors: Gunnhild Marthinsen, Siri Rui, Einar Timdal
Data type: Record information - specimen data
Brief description: The file includes information about all records in BOLD for the OLICH library, i.e. the DS-OLICH dataset, at time of writing. It contains collecting and identification data. The data are as downloaded from BOLD, without further processing.
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Suppl. material 3: OLICH library - Specimen details - Darwin Core Standard doi

Authors: Gunnhild Marthinsen, Siri Rui, Einar Timdal
Data type: Record information - specimen data in Darwin Core Standard format
Brief description: The file includes information about all records in BOLD for the OLICH library, i.e. the DS-OLICH dataset, at time of writing. It contains collecting and identification data. The data are downloaded from BOLD and further formatted to the DC standard by the authors.
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Suppl. material 4: OLICH library - DNA sequences doi

Authors: Gunnhild Marthinsen, Siri Rui, Einar Timdal

Data type: Genomic data, DNA sequences

Brief description: ITS sequences in fasta format. Each sequence is identified by the BOLD ProcessID and species name, separated by pipe. The data are as downloaded from BOLD.

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